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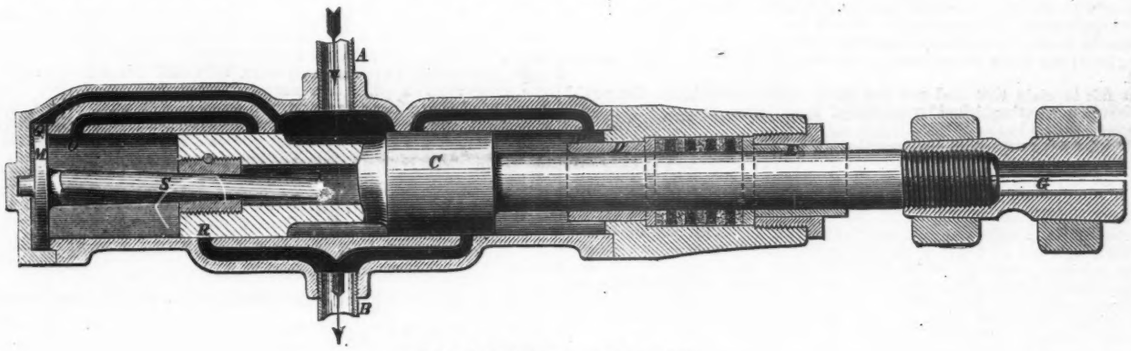
The Reynolds Rock Drill.

ON May 29th, we illustrated this latest style of rock drill, to answer the inquiries of those who desire to see how far it is possible to simplify what we are accustomed to think of as a somewhat complicated machine; we now give a sectional view of the machine.

"The cylinder is cast on a single piece, and has no valves of any kind. The bottom head is made long, so as to serve at once for a guide to the piston-rod, and as a stuffing-box and cushion to absolutely prevent the piston from striking either top or bottom head. The rotation and feed are of the simplest possible construction, and the machine, taken as a whole, seems to be well adapted to the requirements of mines and quarries. The Delamater Works have fitted up special tools for manufacturing this drill upon a large scale, and upon so complete a system that all parts are interchangeable, the same as in gun shop work."

We shall be pleased to hear of its performance in actual practice. Every improvement which tends to generalize the use of labor-saving machinery, and which effects a reduction in the cost of doing a given amount of work, has a value not to be measured by the saving it effects in a single item, for it affects every branch of manufacture through which the material subsequently passes. There are few modern inventions that have been of greater benefit to mining industry than our rock drills, or by which greater ingenuity has been shown.



THE REYNOLD'S ROCK DRILL.

Fires in Anthracite Coal Mines.*

By T. M. WILLIAMS, Inspector of Mines.

DURING the year just ended, we have had three great fires in the mines in the Wilkes-Barre district. One at the Empire Colliery, one at the Prospect shaft, and the other at the Baltimore old mine. It is proposed in this paper to give a brief history of the fire at the Empire Colliery, and the methods employed in extinguishing it. The fire was first discovered breaking out in the air-stack, alongside what is known as the "Kidder Plane," about one o'clock on the morning of December 31st, 1873. Subsequently it was ascertained that the fire originated in the return air-way somewhere near the steam boiler, located inside the mine, near the head of No. 5 slope. The coal from this slope was hoisted to the shaft gangway, at a point nearly four thousand feet distant from the foot of the shaft. As there were from four to five hundred mine cars hoisted per day from this slope, the steam boilers were located at this place. The mines being of considerable extent required a large volume of pure air for ventilation, and no fan having been erected at this slope at the time, the heat from the boiler was made use of to assist ventilation, by conveying the return air from No. 5 slope into the large air-way made from these boilers to the surface through the old "Kidder slope" to the stack where the fire was first discovered. The length of this slope or air-way was about one thousand feet, with a sectional area of about sixty feet. The quantity of air passing through it must have been over sixty thousand cubic feet per minute, as there were fifty thousand cubic feet returning into it from No. 5 slope and an escape also left open into the boiler-room to keep the place cool, and furnish the necessary quantity of air to the fires under the (6) boilers. The vertical height from the boilers to the top of the air-stack on the surface was about four hundred and twenty feet. This height, together with the heat generated by the boiler fires, the heat given off by the men and animals, and the increased temperature due to the depth of the mine, caused a heavy draught, and thereby the passage of over 60,000 cubic feet of air per minute through this slope; in view of this the air must have had the very high velocity of one thousand feet per minute, or nearly eleven and one-half miles per hour, and only requiring one minute for air to pass from the boilers to the top of the air-stack on the surface. As this velocity will be increased by about 36½ times the square root of the difference of temperature between the air entering and that escaping from it,* resulting from the additional fire now kindled in the upcast slope, it will be readily seen that it did not require much time for a fire that originated at the back end of the boiler to make its way to the surface along the up-cast slope, which was lined with dry timber almost to the foot of the wooden air-stack on the surface.

The six boilers were placed in the mine at two different times, and when the last pair was put in, the officers in charge took extraordinary precautions to prevent the possibility of a fire. The mine boss, LEWIS S. JONES, stated that the air-way was examined in whole or in part each day, and that nothing unusual had been detected by those whose duty it was to make the examination, on the day previous to the fire breaking out. How the fire originated in this air-way, we are unable to state. We know that in chimneys the accumulated soot often ignites; then, why might not this air-way have ignited in the same manner, as it is well known that the floor, roof and sides are usually covered with a coating of soot, which is nothing but small particles of carbon, the result of imperfect combustion?

It is also possible, though not probable, that it might have been kindled from a spark from wood or some other combustible material carried directly from the boiler fire; or it might have been caused by the falling of a piece of coal upon the mouth of the iron tube or flue, in sufficient quantity to diminish the size of the outlet, thereby causing a sufficient increase in temperature to ignite the accumulated rubbish. The fire may be attributed to either of the above causes, and it must have originated near the flue at the back of the boilers, as there was quite a fire at this point when first reached by the men.

From the very hour it was ascertained that the mine was on fire until it was decided to hermetically seal it up, all available means were used to extinguish it, according to the best judgment of the most experienced men in the employ of the Lehigh and Wilkes-Barre Coal Co. and of other companies.

To give all of the details would make this paper too long and tedious. It is but just to the men, however, to say that this great fire was combated with that courage and determination peculiar to these hardy men of the mines. Each man having a certain duty alotted him attended to it most cheerfully, let the task be ever so hazardous. The men employed at these mines are, as a body, a very intelligent class of workmen; and courage, combined with intelligence, are in times of great danger, as in this case, invaluable.

The force employed was increased from time to time, as circumstances required, until finally they numbered several hundred. This large force was divided into detachments, each one having its foreman, who received his instructions from the higher officers. Each detachment had its allotted territory, and the whole work was evenly divided into three sections. The working time of the different parties was six hours, except in places where the danger was not so great, and the work not so exhaustive, the hourswere lengthened correspondingly. The conquering of the fire by forcing water on it was not doubted until the first of March, when a large area of the roof on the east side caved in. This caving in had been expected for several weeks, and great uneasiness was felt by those who were acquainted with the danger, it being feared that it would come with such force that the wind from it would destroy some of the wooden brattice, upon which scores of lives depended.

When the roof and sides gave positive indications that the dreaded cave was about to take place, the fires under the six portable boilers were taken out, the men withdrawn, and all the pumps, of which there were six, (Knowles No. C) were left to their fate. Work was again resumed within two days, notwithstanding the fire had destroyed hundreds of feet of brattice forming the manways, and extended back over ground which had formerly been one mass of fire, but had been conquered and was perfectly cool when the men were with-

* A paper read before the American Institute of Mining Engineers at the New Haven Meeting, February 1875.

* Formula for draught in chimneys: $V=36.5\sqrt{H\,(T-t)}$ (MOLESWORTH.)

drawn. The west side of the fire had not been entirely surrounded, although extraordinary efforts had been made to do so from the beginning. There being no opposition on that side, it must have spread rapidly in that direction; for soon after the cave took place, forcing the men back nearly to the place of beginning on the three sides, the fire on this side made its way into an old cave, in the old No. 1 drift and Kidder workings, raising the temperature so high in the adjoining old workings that it was thought tinder might have been ignited, and thereby spreading it where it could not be extinguished unless by some other means. The officers of the company again held a consultation and decided to seal the mine up, so as to exclude the air from the fire, and then inject steam in the territory enclosed.

Mr. LEWIS S. JONES, "the mining boss," had been experimenting on the use of steam for a week or two previous, allowing it to escape into the open air. Its use was found to be beneficial when allowed to escape upwards.

In course of time, the enclosure around the entire area was completed. The materials used in the construction of the stoppings and walls inside were stone, brick, cement, lime mortar, planks and boards. Everything was done that was thought to be of any assistance in excluding the air, and retaining the injected steam and the gases resulting from the fire inside the enclosure. The surface leakages, which consisted of large cave holes, were sealed up by the hauling of immense quantities of earth and clay and tamping the same tightly into all the crevices and holes in the broken surface and rock.

A nine-inch hole, bored by the diamond drill from the surface down into the mine, at a point near where the fire orginated, was made use of to inject steam on the north side of the fire. There was an outside casing in the hole to protect the steam pipes from rust, and nine boilers erected on the surface to supply the steam.

Steam was also forced in from the Kidder slope, on the south side, from nine boilers, and from No. 1 slope at the west end of the enclosure, from nine boilers, and at the east end from ten boilers during the night, the steam being required during the day to hoist coal from Hollenback No. 2 Slope. The injection of steam in the burning mine was commenced about the first of May, on three sides of the fire, and upon the fourth side shortly after. From this time until the first of December, 1874, steam was injected into the enclosure constantly, from twenty-seven boilers during the day, and from thirty-seven during the night. It was often observed going in with a boiler pressure of 50 lb. per square inch. About the middle of December the mine was entered, and the fire in the lower section was found to have been extinguished. In the upper or Kidder section, the heat was so intense, the examination had to be discontinued until the heat had decreased, although no fire was seen. The entrance was again sealed up, to remain until some time in the future. Whether the fire is all extinguished, is not positively settled; but be that as it may, its final extinguishment is only a question of time; for the lower section, where the fire was raging so strong when it was closed, has been carefully examined and no fire found.

It is but fair to state that had not the great cave occurred, the fire would probably have been extinguished by the use of water alone, unless it had penetrated the old cave on the west side.

Many persons have expressed surprise that a fire in one thousand feet of airway should have caused such a calamity. It may be explained by the fact, that this airway was the only opening from the boilers to the surface in that part of the mine, and very soon after the fire broke out, the cribbing over which the air-stack was located burned out, which allowed it to cave in. This immediately impeded the ventilation, causing the carbonic acid-gas manufactured from the burning wood and coal in the airway to fall back to the lowest level or gangway, where the main travelling had to be done. Soon after, the wooden doors in the stone stoppings were burned out, and a draught was formed by the heated air escaping to the surface through the old cave holes on the east side of the Kidder old slope. This, in part, relieved the lower passages of gas, but it was only to increase its force as the fire increased.

In order to combat the fire at all, it became necessary to increase the ventilation, and three fans, fifteen feet diam., were erected at different times.

It was well understood that to introduce more fresh air would increase the fire at a rapid rate, but to proceed with the work without more pure air was impossible.

So strong were the gases at times that scores, even hundreds, of men were overcome by them. Sometimes a whole squad of fifteen or eighteen men would be stricken down simultaneously. Several narrow escapes occurred, and many nearly lost their lives. On one occasion, March 16th, one of the blades of the fan broke, causing a few minutes delay or stoppage in the ventilation, and before an alarm could be given to the men inside, the deadly gases (which filled either side of the advanced manways, and were only kept out of them by the wooden brattice and air pressure), fell back into what was before an open passage, filling it with deadly poison, and cutting off the retreat of one of the men (MICHAEL HARTE) who happened to be in the extreme advance. His comrade at once gave the alarm, when many brave foremen, miners and laborers rushed in to try and save them, but the enemy held the field, and at one time no less than six of the volunteers were piled one upon the other before the fan was again in motion, and pure air sent to their relief. It is difficult to say how many brave men would have lost their lives had the starting of the fan been longer delayed. The asphyxiated men were removed and properly cared for, and all recovered except HARTE. This was the only case that resulted fatally, though dozens of men were affected by the gases at different times.

It is impossible to estimate what might have been the result in serious accidents and death, had it not been for the extraordinary and constant care taken in every department. Everything possible for the safety and comfort of the men was provided by the General Superintendent, and every precaution possible was taken by the Mining Superintendent and his assistants to prevent loss of life.

Some may ask: Why was not the sealing up of the mine resorted to as soon as it was ascertained that the fire had gained such headway? The fire originated near the head of No. 5 slope, where a large quantity of coal was hoisted daily, and it was thought that it could be extinguished without resorting to the abandonment of this slope; besides, the matter of time and expense appeared too enormous to be thought of.

To think of the amount of labor and material requisite to enclose the west side of the mine, at a point twenty-five hundred feet from the origin of the fire up to the surface, a distance of twelve hundred feet, and wall up the stoppings necessary on the eastern end from the Hollenback lower gangway to the No. 1 drift, a distance of over fifteen hundred feet, and along this drift many hundred feet, together with the many dozen cave holes along the surface line of four thousand feet, many of which were not less than one hundred feet in diameter, at that time was considered almost impossible.

Subsequently, when all became better acquainted with matters of expense, and saw that it might prove cheaper in the end, the idea of sealing up the mine was entertained.

The perimeter of the space enclosed was eleven thousand feet, including the rib on the north or lower side, in which, fortunately, there were but few holes to be closed. The entire superficial area of territory enclosed is about 4,800,000 square feet. The thickness of the seam averaged at least sixteen feet, and it is fair to infer that seven-sixteenths of the same may be taken as space to be filled with steam and gases, making an aggregate of 36,600,000 cubic feet. This leaves nine feet or nine-sixteenths of the vein to be filled with pillars, waste rubbish, and caves in the enclosed territory.

The seam lying at an angle of 60° to 75° in some parts, would require a long time for the carbonic acid gas generated by the fire to fill to the top of the old workings at the outcrop, a vertical height of 420 feet. Whatever air was admitted by any means would be at once consumed by the fire and the products of combustion added to the reservoir of carbonic acid forming below. This process must have continued as long as there was any fire above the body of carbonic acid gas.

There were but few leakages found and they always showed an admission of fresh air at the lower points, and the escape of the lighter or more rarified air from the upper workings near the surface.

From this state of things the writer would deduce the conclusion, that the fire would be gradually extinguished from the lower gangway upward.

This process would continue as long as there was any fire at a higher elevation, fed with oxygen from leakages and from the steam introduced, until finally the fire would be entirely extinguished.

It is possible that the enclosure was opened before the fire was entirely covered by the accumulated gases, although it was entirely extinguished in the lower section.

Whether the injection of steam into the fire assisted to any material degree in its extinguishment, the writer is not prepared to say. We know that whatever quantity of water was converted into steam, was in a large proportion likely to be distributed in the form of vapor, and its specific gravity being higher than the gases or atmospheric air, would cause it to ascend upwards. It is well known that any fire, large or small, must necessarily die out, unless supplied with oxygen from the air or otherwise; and the question to be settled is whether the introduction of steam into a body of fire already deprived of the admission of oxygen, will facilitate the process of nature in extinguishing it, even where there is a limited quantity of air admitted through leakages; if it will not, the sooner it is ascertained the better it will be for those who are so unfortunate as to have a fire in their mines, and thus they would save the unnecessary heavy outlay and expense required by its use.

Steam has been used in Wales as an adjunct in extinguishing mine fires, to force large quantities of carbonic acid gas into mines which generated explosive gases. It being intended to neutralize the carburetted hydrogen, and at the same time to flood the fire, as it were, with carbonic acid gas. This method was successfully applied at a mine in Rhuabon, North Wales. Subsequently it was tried at another mine and, for some reason unexplained, did not prove successful, and its use was abandoned.

In conclusion, I would state that the resealing of the mine does not interfere with the mining of coal in the No. 5 slope Empire Colliery.

Influence of Silicon, Sulphur, Phosphorus, and Manganese on the Qualities of Iron.

BY RICHARD AKERMAN, OF THE STOCKHOLM SCHOOL OF MINES.

CONTINUED FROM PAGE 458.

IRON AND PHOSPHORUS.—THE COMBINATION OF PHOSPHORUS WITH IRON.

PHOSPHORUS has, like sulphur, a strong propensity to combine with iron, and compounds of these substances can, therefore, be produced both by bringing phosphorus in contact with red-hot iron, and by heating iron in mixture with phosphoric acid and charcoal powder. In the same manner, also, iron containing carbon can, when heated along with phosphoric acid without separate addition of charcoal, reduce and combine with phosphorus; but, on the other hand, according to KARSTEN (1) no such reduction can take place without addition of charcoal when the iron has no considerable content of carbon.

A compound with fixed proportions of iron and phosphorus (Fe^4P^2) can, according to BERZELIUS (2), be obtained by carefully heating in a crucible phosphate of protoxide of iron ($Fe^2O^2P^2O^5$) mixed with a fourth of its own weight of powdered charcoal. When this is done, the remarkable circumstance takes place that half the phosphorus present is driven off, inasmuch as $14C+2Fe^2O^2P^2O^5 = Fe^4P^2+14CO+2P$, and if charcoal is added in excess, there is driven out even a little more phosphorus while the carbon in its stead combines with the iron. The same compound of iron and phosphorus is obtained according to C. FREESE (3) by heating to redness any iron salt of phosphoric acid mixed with charcoal; but for this purpose it is necessary that the compound formed be protected from oxidizing by a covering of slag, and that charcoal be not present in any considerable excess, for in that case the phosphide of iron becomes mixed with carbon-iron. Besides this there are, according to FREESE, only two other true compounds of phosphorus and iron, namely, Fe^2P^2 and Fe^4P^5, and even these, he thinks, can, by heating to redness in carbonic oxide gas, part of the phosphorus being driven off, be turned into the first-named compound Fe^4P^2, which only, therefore, ought to be found in pig-iron. When phosphide of iron and iron are fused together they unite, or are dissolved in each other (4), and iron can therefore be produced with all possible proportions of phosphorus less than that in the last-named compound.

Phosphide of iron is also formed when metallic or oxidized iron is carefully heated together with charcoal, in mixture with salts of phosphoric acid and silica, inasmuch as the phosphoric acid set free by the silicic acid is reduced by the charcoal, and immediately thereafter taken up by the iron. Of a mixture of iron, coal, and bone-ash, which last-named substance, as is known, to a great extent consists of phosphate of lime, a very considerable amount of phosphorus, even without admixture of silica, can be reduced and taken up of the iron. PERCY (5) mentions an iron with 12·66 per cent. phosphorus produced in this way, and during its preparation some phosphide of calcium is also, besides, thought to have been formed. We cannot, however, from this, come to the conclusion that phosphorus can be removed in the furnace slag in the same way as sulphur or phosphide of calcium, for this is altogether too weak a compound to be formed when so much silicic acid is present that the lime can pro-

(1) Eisenhüttenkunde, 3te Ausg, T. 1., p. 418.
(2) Lehrbuch der Chemie, 5te Aufl., T. 2, p. 730.
(3) Poggendorffs "Annalen der Physik und Chemie," Bd. 132, p. 225.
(4) Berthier, "Traité des essais par la voie sèche," T. 2, p. 203.
(5) "Metallurgy; Iron and Steel," p. 71.

duce a fusible compound with it. If any phosphorus is separated in the slag it must, therefore, be as a salt of phosphoric acid.

On this difference between the relations of sulphur and phosphorus depends the circumstance that so much sulphur and so little phosphorus can be separated from the iron in the blast-furnace process. For at a high temperature the silicic acid has power to drive out or set free the phosphoric acid from its salts, and when free, it is, when carbon is present, immediately reduced, and combined with iron if it is in the neighborhood. It is thought that this reduction of phosphoric acid takes place in a higher degree than otherwise if metallic iron is present, as it has a specially strong propensity to combine with phosphorus, and though there has been found in lead slags, which consist of monosilicates (principally of protoxide of iron) 2·5 per cent. phosphoric acid,(6) it is yet not to be wondered at that common blast-furnace slags cannot retain any considerable amount of phosphoric acid, partly, because they are most frequently richer in silica than the lead slag mentioned, partly, because the temperature is higher in an iron than in a lead furnace, and partly, because the reduction of phosphorus is not promoted in the last named, as in a blast-furnace, by the presence of metallic iron. Iron ores containing phosphorus must in consequence of this always give in the blast-furnace a pig iron containing phosphorus, independently of whether the phosphorus occurs in the ore as an iron salt of phosphoric acid, which is specially the case with ores consisting of hydrated oxide of iron, or as phosphate of lime, which partly forms the principal portion of the mineral apatite $\left(Ca \left\{ \frac{Cl^2}{Fl^2} + 3\ Ca^3O^3, P^2O^5 \right) \right.$ occuring in many iron ores, and partly occurs in all petrifactions, and therefore renders impure all such iron ores belonging to the later formations as contain animal remains. But, even if the ores themselves are free of phosphorus, no pig iron absolutely free of phosphorus can yet be produced, for, not only the fossil fuels, but also charcoal contains some phosphoric acid, which, during the furnace process, is reduced, and combines with the iron. The Dannemora pig itself contains in consequence about 0.01 per cent. phosphorus.

A SMALL PART OF AN IRON ORE'S CONTENT OF PHOSPHORUS SOMETIMES ESCAPES DURING THE DRY ASSAY IN THE FORM OF GAS.

KARSTEN (7) went so far as to maintain that the whole of the phosphorus occurring in a furnace charge must necessarily pass into the iron; but this does not always hold good, both, because where the charge is very basic, a small part of the phosphorus is removed in the slag, and researches instituted at the Stockholm School of Mines have shown that during the dry assay, which may to some extent be compared with the smelting in a blast-furnace, a part of the phosphorus contained in the ore escapes in the form of gas in one way or other. In other words, though the phosphorus occurring in an ore when the charge is acid, is in general completely recovered in the button of pig-iron obtained by the dry assay (8), it has yet also happened that the pig-iron and slag obtained did not together contain all the phosphorus found in the ore, but a part of it had been lost without leaving a trace (9).

As an example of this, an experiment carried out by E. BARNEKOW at the Stockholm School of Mines may be referred to. A brown hematite from Ornstolsa, in Jemtland, which contained 2·04 per cent. phosphoric acid, or 0·8907 per cent. phosphorus, yielded in the dry assay, with 25 per cent. lime, the largest quantity of lime with which it would fuse, 56 per cent. pig-iron and 33·75 per cent. slag, of which the pig contained 1·41 per cent., and the slag 0·026 per cent. phosphorus. Of the phosphorus contained in the ore there was thus recovered:

In the pig-iron	0·56	× 1·41	= 0·7896	per cent.
In the slag	0·3375	× 0·026	= 0·0088	"
Or together			0·7984	"

The ore's true content of phosphorus was 0·8907 per cent., and of this there had been volatilized during fusion 0·1923.

A yet more striking example of this was given by an experiment made by C. A. WRANG, also at the Stockholm School of Mines. A magnetic iron ore from Kerunuwara, in Lapland, which contained 1·621 per cent. phosphorus, yielded by the dry assay, with 7 per cent. quartz, 66·2 per cent. pig-iron, with 1·572 per cent. phosphorus, and 16 per cent. slag, with 0·063 per cent. phosphorus. Of the phosphorus contained in the ore there was thus recovered:

In the pig-iron	0·662	× 1·572	= 1·04	per cent.
In the slag	0·16	× 0·063	= 0·01	"
Or together			1·05	"

The remainder, 1·621—1·05=0·571 per cent., or fully one third part of the ore's whole contents of phosphorus, had been lost without leaving a trace.

The circumstances in the blast-furnace and the dry assay are, however, not so similar that the conclusion can certainly be drawn that the ores which show a loss of phosphorus in the dry assay, will also do so in the furnace if they are fluxed in the same way. For in the dry assay the whole quantity of ore is subjected at the same time to a certain temperature, and the volatilized phosphorus cannot, therefore, be condensed upon the colder ore above. This, on the other hand, is the case in the blast-furnace, and if the removal of phosphorus in the dry assay must be supposed to take place in the form of phosphorus, and not as phosphuretted hydrogen, it is, therefore, probable that the same ore which in the dry assay parts with the phosphorus contained in it, yields products in the blast-furnace which contain it undiminished.

CIRCUMSTANCES WHICH CONDUCE TO FREE FROM PHOSPHORUS IRON PRODUCED FROM ORES CONTAINING IT.

Ores Purified from Phosphorus through Treatment in the Wet Way with Acids.—As phosphoric acid is not volatile, it cannot be driven out of iron ores, like sulphur, by roasting; but as both phosphoric acid itself and its acid salts are soluble in water, it is possible, by treating the ore with dilute acids, to dissolve the greater part of the phosphorus contained in it. In this manner STROMEYER (10) has succeeded, by dissolving with dilute hydrochloric acid, in bringing down to 0·6 per cent. the phosphorus contained in a brown hematite, containing lime from Ilsede, which, in its natural condition, contained 2·8 to 3·3 per cent. *phosphorus*, and we learn that the dissolving out of phosphoric acid with sulphurous acid and water is carried on with advantage on a large scale at Kladno, in Bohemia, according to a patent of JACOBI (11). The salts, rich in phosphorus, thus obtained are afterwards used as a manure.

The Influence of Basic Charges.—It has already been shown both that the phosphorus removed in the furnace slag must occur therein as a salt of phosphoric acid and that these salts, when strongly heated, are broken up by silicic acid, on which reaction the phosphoric acid is set free, and at the same time reduced by the carbon present; and the conclusion may, therefore, be drawn beforehand that the power of the slag to take up phosphorus must be greater the less silica it contains. But it has also appeared that even when so little is present as is the case in bone ash, it is possible, if iron also is present, and the temperature is raised sufficiently and the heating carried on long enough, that a great deal of phosphorus may be reduced and combine with the iron. As, further, silicates, in order that they may be smelted in the furnace, cannot be more basic than that their composition nearly corresponds to the so-called mono-silicate ($R^2\ O^2\ SiO^2$), it is not difficult to see that no particularly noteworthy amount of the phosphorus contained in a blast-furnace charge can, in ordinary circumstances, be *brought into the slag*. This appears most clearly from the state of matters within the Cleveland district, in England, where the ores are very rich in phosphoric acid; for though for the completest possible removal of the sulphur the charges are there kept so basic that, even if allumina is reckoned as neutral, the composition of the slag corresponds to the mono-silicate, the furnace slags do not yet contain in general more than some tenths per cent. of phosphoric acid, while the phosphorus contained in the pig commonly rises to almost 1½ per cent.

As a specially striking example of the behavior of phosphorus in the furnace process when a very basic charge is employed, the following calculations, grounded on accurate researches carried out by BELL (12), are here stated. The amount of phosphorus found by him in the materials of the charge in a furnace within the Cleveland district were:—

In the roasted ore	0·522	per cent.
" lime	0·011	"
" coke	0·265	"

and the products obtained from it contained:—

The pig iron	1·441	per cent. phosphorus.
The slag	0·098	" "

For one centner pig iron there were employed about 2·40 centners roasted ore, 0·6 centner lime, and 1·20 centner coke, and for every centner pig iron there was about 1·5 centner slag. There were thus placed in the furnace for every centner of pig iron produced:—

In the ore	2·40 × 0·522	= 1·253	lb. phosphorus.
" lime	0·60 × 0·011	= 0·007	"
" coke	1·20 × 0·265	= 0·318	"
Or together		1·578	" "

There were removed from the furnace per centner of pig iron produced:—

In the pig iron	1·00 + 1·441	= 1·441	lb. phosphorus.
" slag	1·50 + 0·098	= 0·147	"
Or together		1·588	" "

which, in consequence of some mistake in the calculation, exceeds by 0·010 the amount of phosphorus placed in the furnace per centner of pig iron, but the conclusion may be drawn from this that in this case scarcely any phosphorus was volatilized.

In less basic furnace slags there is commonly found but a trace of phosphorus even when the charges are very rich in it.—*Iron.*

TO BE CONTINUED.

(6) "Berg-und Hüttenmännisches Jahrbuch der K. K. Bergakademien," Bd. 12, p. 345.
(7) Eisenhüttenkunde, 3te., Ausg. T. 1, p 425.
(8) "JERNKONTORET'S Annaler," 1864, p. 290.
(9) "JERNKONTORET'S Annaler," 1864, p. 420.
(10) "Illustrirte Gewerbezeitung," 1869, p. 335.
(11) "Bayerisches Industrie-und Gewerbe-Blatt, 1871, p. 187. "Dingler's Journal," Bd. 201, p. 245.
(12) "The Journal of the Iron and Steel Institute, 1871," Vol. II. p. 283.

Volumetric Estimation of Zinc.

By F. MAXWELL LYTE, F.C.S.

SOME advantage will be found by the employment of a uranic salt as an indicator in the estimation of zinc volumetrically, by means of ferrocyanide. The zinc should be in solution, in hydric chloride by preference, and the solution should be pretty strongly acid. Iron or copper should not be present, nor should nickel or cobalt.

When a solution of zinc in hydric chloride is heated to 80° or 100° C., rendered pretty strongly acid, and a drop or two of uranic acetate added, and then a solution of potassium ferrocyanide run in from a burette, a brown spot of uranic ferrocyanide forms where the potassium ferrocyanide falls, but disappears on stirring so long as a trace of zinc remains unprecipitated; but the moment all the zinc has become converted into ferrocyanide, the next drop or so of potassium ferrocyanide tinges the whole liquid brown. I prefer, in practice, not only adding a trace of uranic acetate to the zinc solution, but at the same time—at the end of the operation—trying a drop of the zinc solution on a white porcelain plate, with a glass rod moistened with the uranic salt. The reaction seems to me in this case slightly more delicate, while the operator is warned of the approach of the termination by the fact that the brown color in the liquid disappears rather more slowly towards the end of the operation.

Notes.

Supply Coal and Iron Company.—This Company, of which Mr RIDEOUT, of Boston, is President, and Mr. ORMES, of New York, is Superintendent, have recently purchased 1,080 acres of coal land about fifteen miles above Charleston, and are actively engaged in opening their mines and preparing to ship coal. The company declare their intention of commencing the erection of a blast furnace at an early day. —*Charleston (W. Va) Manufacturer.*

Apparatus for Getting Rid of Dust in Washing Slack.—M. BARBIER-PERROTON, of Saint Etienne, has recently patented an appliance for rendering easier and more economical the washing of slack, by previously effecting the separation of the fine particles, or dust, from the granular particles, which are thus alone submitted to the operation of washing. This separation is effected by means of a current of air supplied by a blower. The apparatus consists of a drum with internal blades, which may be flat or curved, made to revolve by the same motive-power that drives the blower. The slack falls down through a passage at one of the ends of this drum. The wind draws up with it the fine particles into a chamber, open at the other end, at a little distance from the drum, and the granular particles fall in the space between the two, on account of a slight inclination given to the axis of the drum. The coal, thus freed from the lighter particles, is conducted to the washing apparatus direct. The advantages which result from the use of this appliance are the following:—1st, Diminution in the labor of washing, on account of the smaller quantity of coal to be washed; 2d, further diminution in this labor, on account of the washing being performed better and more expeditiously; 3d, increase in the quantity of washed coal, as the dust may be mixed with the washed coal direct, without itself undergoing the process of washing, which considerably reduces the quantity.—*La Houille.*

THE ENGINEERING AND MINING JOURNAL.

NEW YORK, SATURDAY, JUNE 26, 1875.

RICHARD P. ROTHWELL, C. E., M. E. } Editors.
ROSSITER W. RAYMOND, Ph. D., }

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

The Engineering and Mining Journal is devoted to Mining, Metallurgy, and Engineering. Communications on these subjects will always be welcome.
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The Black Hills Cold Excitement.

THE gold fever is likely to break out again, judging from the reports sent to the New York papers by their correspondents with the expedition now exploring the Black Hills. It is said that fabulous amounts of gold are obtained in the washings, and that a camp of 100 miners has been found at work in Custer Gulch. While there is no reason to discredit the existence of gold in the Black Hills, there is certainly needed better evidence of its being found in paying quantity, than the reports we have yet seen. And, at the best, the hard work, great privations and very uncertain reward, which accompany the labors of the pioneer gold miner, are a poor inducement for any man to forsake even a modest living among civilized communities. These pioneers or prospectors are, as a rule, a restless and rough class, for whom the very hardships and dangers of a border life have a certain irresistible attraction. But, in the present instance, their usual dangers are supplemented by the penalty of the law, for which they have little liking. Entry to the Black Hills country being forbidden by the Government, those who undertake the trip are likely to sail between Scilla and Charybdis—the Indians and the Army. What the one leaves, the other will take.

The following dispatch has been received at the Indian Bureau from Prof. JENNEY, dated Camp on French Creek, near Harney's Peak, June 11, 1875. It contains the latest and most reliable information on this subject:

THE HON. C. P. SMITH: I have discovered gold in small quantities on the north bend of the Castle Creek, in terraces or bars of quartz gravel. I arrived here yesterday. About 15 miners have located their camp on the Creek above here, and have commenced working. Gold is found from Castle Creek southwardly to French Creek, at this point, and the deposits are almost wholly in Dakota. The region has not been fully explored, but the yield of gold thus far has been quite small, and the reports of the richness of the gravel bars have been greatly exaggerated. On French Creek the deposits of gravel are very unfavorably situated. The water supply is small and failing, and the grade too small to admit of the tailings being carried off by the stream. The prospect at present is not such as to warrant extended explorations in mining.
W. P. JENNEY, E. M. G. Expedition.

Opening of the Easton and Amboy Division of the Lehigh Valley Railroad.

THE COAL WHARVES AT AMBOY.

ON the 22d inst., a very pleasant party of some 400 gentlemen enjoyed the hospitality of the Lehigh Valley Railroad in the conventional "excursion" which celebrated the official opening of the Easton and Amboy Railroad. It would be difficult to record the names of all the prominent representatives of the railroad, coal and iron interests, who were present on the occasion, but we may mention the following well-known gentlemen: ASA PACKER, ROBERT SAYRE, WM. SAYRE, and other officers of the Lehigh Valley Railroad; ROBERT PACKER, of the P. & N. Y. R. R.; MOSES TAYLOR, SAMUEL SLOAN, and E. K. HOLDEN, of the Delaware, Lackawanna and Western Railroad; JOHN TAYLOR JOHNSTON, of the Central Railroad of New Jersey; THOS. SCOTT, A. J, CASSATT, and other representatives of the Penna. Central Railroad; F. A. COMLY, Prest. of the North Penn. Railroad; J. J. ALBRIGHT, of the Delaware & Hudson Canal Co; MAJOR HOYT, of the Pennsylvania Coal Co.; E. W. CLARK, Prest. of the Lehigh Coal and Navigation Co. Among the heavy coal operators present may be mentioned: ARIO PARDEE, of Hazleton; B. G. LINDERMAN, of Stockton; STOUT, of Ebervale; R. SHARP, late of Eckley; SAMUEL BONNELL, of Honey Brook; ROBINSON, of the Spring Mountain Coal Co.; Jos. STICKNEY, of the Susquehanna Coal Co.; CHAS. HUTCHINSON, of Kingston; Messrs. ELY, of Beaver Meadow, and many others.

The iron men were well represented by Father DAVID THOMAS and his sons SAMUEL and JOHN THOMAS of Hokendauqua; JOSHUA HUNT, of Catasauqua; JOHN FRITZ, of Bethlehem; KENT, of Phillipsburg, and others. Any description of the excursion further than the statement that it included a very pleasant ride over the road from Easton to Amboy, and a cruise and lunch on the Steamer Richard Stockton, would be foreign to our purpose. We can better occupy our space in mentioning some facts of interest connected with this great engineering work.

Though the Easton and Amboy Railroad Company is nominally an independent corporation, it is in reality but a division of the Lehigh Valley Railroad, its capital stock being simply nominal in amount, and all owned by, and the road itself leased to, the Lehigh Valley Railroad. The road from Easton to Amboy is just 60 miles in length, and has exceedingly favorable grades, 22 feet to the mile being, we are informed, the heaviest grade against the coal traffic coming East; even this is only from Easton to the summit at the Musconetcong Tunnel, (12 miles) and on this portion of the road two locomotives will be used to move the heavy coal trains; over the rest of the road a single engine will move a train of 130 coal cars, containing 780 tons of coal. The road is of the most substantial character. The heavy track will be laid with steel rails; a double track is now laid over a great portion of its length, roadbed and bridges being intended for a double line throughout. At Amboy, the coal cars are run on a trestling which, in the approach to the piers, is 1800 feet in length, and nine tracks wide; in addition to this, the piers are 800 feet in length and 65 feet wide, with three tracks for loaded and two tracks for empty cars. The trestling has an average height on the piers of 24 feet, thus affording stocking room for a large amount of coal on each dock and its approach. The coal is discharged from the cars into chutes, which convey it directly over the holds of the vessel. In its passage it runs over screen bars which take out the fine ("pea" and "dust") coal, delivering the coal clean and in good order. As all coal is screened before loading into the railroad cars at the mines, the fine coal passing through the screens on the docks represents but little more than the breakage in a transportation of, say, 150 miles; it amounts to nearly two per cent. of the whole. A notable feature in these docks is that the tracks for loaded cars have a grade of 0.6 foot in 100 towards the outer end of the pier, and there the cars, by means of an automatic switch, run onto the "light track" which has a grade of 40 feet to the mile, say, 0.75 per 100, in the opposite direction; the cars, therefore, run on and off the trestling by gravity, without the aid of the locomotive.

Along the entire 2600 feet of trestling coal can be stocked, being simply dumped through the track. Under the approach trestling there is a depressed track, so arranged with traps, at intervals, as to take up the stock coal with a minimum of handling; the cars from this are then drawn up on to the main track by a locomotive, and thence run out on to the dock trestling, where the coal is run over the screens in loading. Since the railroad company manages the shipping docks itself, it will deliver the coal on board without the intervention of any other party. In the case of stocked coal, the usual extra charge of 10 cents per ton will be made for the additional handling; in all cases, as is customary, the dock owner gets the fine coal (pea and dust) that passes through the screens. This is worth, on an average, $1 50 per ton, and runs 2 per cent. of the coal loaded; it would make, therefore, about 3 cents per ton on the coal shipped; while the actual cost of loading, including wear and tear of plant, may be estimated from 7 to 10 cents per ton. The usual charge by dock owners is 15 cents per ton, with 10 cents additional for stocked coal.

The company has now two coal piers, and will shortly have two piers for other freight. The slip between the piers is 100 feet wide, and has 16 feet of water at low, and 22 feet at high, tide. As the piers load on both sides, it gives at present 3,200 feet of pier face for coal loading, with an estimated capacity for each pier of 1,000,000 tons a year. As the company owns about 6,000 feet of water front, and 450 acres of land, there is no limit to the loading facilities which may here be made.

In the ENGINEERING AND MINING JOURNAL of May 29th, we published an excellent paper on the Musconetcong Tunnel of this Easton and Amboy road. The coal shipping docks at Amboy, though not so costly or difficult an engineering work, are yet examples of the same skill that has directed the whole, and the several officers of the road have earned great credit for the manner in which they have carried to completion every portion of this enterprise.

The total cost of the line (60 miles), including an expensive right of way, the Amboy property, etc., was between $8,000,000 and $9,000,000; the three Amboy docks now built cost about $275,000. The money required for this great work was raised by the issue of stock and bonds of the Lehigh Valley Railroad Company.

The principal income of the new road will be from the transportation of coal, and as the Lehigh Valley R.R. last year carried over 4,000,000 tons, about 2,000,000 tons of which were forwarded to tide water, near New York, some idea of the present magnitude of this growing item of revenue can be formed.

The Lerchburg Iron and Tin Plate Works.

LERCHBURG, Pa., has become famous by the very simple process of "saving a waste product." In 1871, an oil well was sunk near the iron works of Messrs. RODGERS & BURCHFIELD to the depth of 1,250 feet, and though a very decided failure as an oil producer, it was simply the failure which so often characterizes a mistaken vocation. The well itself was "all right," only nature had intended it for a *gas*, not an *oil*, well. Though nature was bountiful, man did not know enough to profit by the riches surrounding him, and the great Lerchburg gas

well blew out, unheeded through several years, its "enriching" stream in the smoke-laden air of the iron works. The pressure with which the gas issues from the well is said to be about 80 lb. to the square inch, but no accurate measurement has, we understand, been made. It is now conducted from the well to the iron works, 400 or 500 feet distant, through a 3-inch pipe, and is ed to the ordinary puddling furnace through a half-inch pipe; the pressure at the furnace is said to be 45 lb. per square inch. The air necessary to burn the gas in each furnace is admitted through five pipes, of one inch diameter each, the blast having a pressure of about two pounds; that this is more than sufficient, is evident from the absence of smoke. Messrs. RODGERS & BURCHFIELD have for years been engaged in the manufacture of sheet iron; though their original plans included that of tin plate, the high cost of iron, fuel and labor made the margin on this so small as to deter them from commencing the work.

The recent reduction in the cost of these items, and, more than all else, the substitution of natural gas for coal in the works, by which an enormous advantage was gained, have enabled this enterprising firm to compete successfully with imported goods in the tin plate market, and there is every prospect that in the near future we shall not only supply ourselves but compete in foreign markets.

The use of natural gas, which is a carburetted hydrogen, or volatilized petroleum, as fuel for steam boilers is by no means novel. It has been used throughout the oil regions for some years under the steam boilers which furnish the power for the oil well pumps. It is, however, but a few months since it was here first applied to the heating of puddling furnaces. The results have been very satisfactory; where formerly the best double hammered charcoal blooms, costing about $80 per ton, were used, now equally good plate is made from common coke-made blooms which cost about $45 per ton. Formerly the works made 10 tons of sheet iron a day, with a consumption of 75 tons of coal a day, while at present nearly 13 tons per day are made with the same plant by the use of natural gas.

The charge in puddling is 460 lb. of pig iron (Lucy principally) with 50 to 80 lb. of cinder, and the product is 480 to 490 lb. of blooms, the time required in the operation being about 1 h. 40 min. The gas is now being heated by passing it through a coil of pipe placed in the chimney flue, and it is said, with great advantage. The ease with which the heat of the furnace can be regulated when using a gaseous fuel, not only greatly facilitates the work, but it favors the purification of the iron.

The several processes through which the sheets go, in making tin plate, may be summed up as follows:

The sheets, cut into the desired sizes, are "pickled" by immersion in a bath of dilute sulphuric acid for 10 to 20 minutes. They are then annealed for from 6 to 7 hours; then rolled cold, to give them a surface polish. This operation hardens the iron, so that the plates are again annealed, with greater care and at a lower temperature, for 6 or 7 hours. The plates are then again pickled in an acid bath for some ten minutes, to remove the scale of oxide, washed in water to remove the acid and then plunged for a few moments into a bath of palm oil or melted tallow. The plates are then put, 40 or 50 at a time, in the tin bath, where they remain about 15 minutes. On leaving this, the plates are plunged into a second tin bath, on leaving which they have the dross brushed off, and go to the third tin bath; from that they go into a tallow or oil bath, from which they are drawn by passing between rolls, which smoothes them. They are then rubbed with shorts, or bran and leather, to clean them, sorted and boxed, each box of I. C. plate, containing 112 lb., or 112 plates, the plates having a gauge of about No. 30, and weighing one pound each; I. X. brand weighs 140 lb. to the 112 sheets.

The capacity of the works is about 800 boxes a week, and at present they make only *terne* plates, the tin bath of which is composed of one-third block tin, and two-thirds lead. Preparation is being made to make bright plates, in which the bath is composed entirely of block (Banca, or English Refined) tin.

A School for Miners, Prospectors and Smelters vs. A School of Mines in Michigan.

OPEN LETTER FROM MAJOR T. B. BROOKS TO THE HON. JNO. J. BAYLEY, GOVERNOR OF MICHIGAN.

I LEARN through the newspapers that a move has been inaugurated for the establishment of a School of Mines in Michigan, and that the State has been asked to aid the project. Having been long identified with the mining interest of Michigan, I venture to write you on the subject through the public press, as I wish to reach a number of persons who are, I believe, like myself, much interested in this subject.

Producing, practically, all the copper consumed in the United States, nearly a fourth of the iron ore, together with a large amount of salt, gypsum, coal, slate, building stones, and other useful minerals, certainly few States should afford better fields for geologists, mining and smelting engineers, than Michigan. But what are the facts as to the number actually employed in our great State, so rich in minerals? The fingers of one hand are more than enough to register all those in the Marquette iron region, and I think I am safe in asserting that those of the other will count all in the copper region; add, perhaps, two or three in the Lower Peninsula, and we may find twelve to fifteen men in Michigan, who are living by this profession, and perhaps one half of these are graduates of mining schools, the others have "picked up" their knowledge in engineering practice.

I am quite well acquainted with several other iron regions in Missouri, Wisconsin, New York, New Jersey, Pennsylvania and Kentucky, and have generally found equally few professional engineers in them. In our large cities will always reside men of this profession, who have a miscellaneous practice over a large extent of country, mostly, perhaps, in the gold and silver regions of the far West. These experts are largely employed by capitalists seeking investments in mineral or smelting property. I have no idea of their number, but conceive that it is not large, and that the business is, on the average, not very lucrative.

There is another class of men who are not recognized as belonging to the profession, but are rather operatives or sellers,—bringing properties to the notice of capitalists,—yet, they are often experts in the true sense of the word; for they know what property to buy, and when to buy it, as also what and when to sell, and how to develop and improve. They are not usually graduates of mining schools.

I have but little acquaintance with the great gold and silver fields of the far West, but understand that they afford better openings for engineers than we have seen exist in the East, and that there, there is scope for that thorough knowledge of the extraction of gold and silver from the ores, which it seems often to be the chief business of mining schools to impart, but which knowledge is of little or no value East of the Mississippi.

It would seem from this hasty survey of the field, that the demand for graduates of mining schools in the older portion of the United States is not large. This profession is necessarily entirely unlike that of law, medicine, or theology, which find a place in every town and almost village. Mining engineers are only wanted in those exceptional localities where there are mines, and not always, as it seems, even there to any great extent.

We will now look for a moment at the existing means of supplying this demand. The New York School, backed by the wealth and influence of Columbia College, is firmly established, and is graduating many highly educated young gentlemen yearly. Lafayette College, at Easton, Pa., has an excellent Mining department, in which Prof. RAYMOND has charge of a department. The new Philadelphia School, a department of the University of Pennsylvania, is in operation, and must succeed since it numbers LESLEY and GENTH in its faculty. Others, of lesser note, are scattered over the country, for most of our Universities and some Colleges have a "mining department." Besides, we have two or three most excellent scientific schools in New England, which turn out men fit for any scientific pursuit, and who often make as good engineers, as if they had been especially educated to the profession.

Crossing the Atlantic, we find in London, the Royal School of Mines,—practical as is everything English, and under the auspices of the officers of the geological survey—a first-class school. In Paris is the great *Ecole des Mines*. In the old mining regions of Germany are the famous schools of Freiberg and Clausthal, which gave us HASLER, the first Superintendent of the United States Coast Survey, and which have given to the world HUMBOLDT, von BUCH, and a number of men eminent in science. The Berlin Berg-Akademie, at present, ranks as one of the best; others of less note need not be named. Many of the students at all these foreign schools are Americans, and many who are not so by birth, propose to make our country their home on graduating, on account of the better openings it affords for young men without capital.

We thus see that existing institutions are capable of turning out yearly a large number of highly educated engineers, and may anticipate the well-known fact in the profession, that a large proportion of graduates of such schools do not follow the profession proper at all, but, instead, become teachers, analytical chemists, founders of new mining schools, or drift into entirely diverse callings.

Educating young men thoroughly in science is one of the chief advantages to the world of such institutions, in which they take rank only with the various excellent Polytechnic Schools in Europe and America, but have perhaps this disadvantage, that being professional in name and character, it is questionable whether, especially in America, they do not give pure science rather too much of a bread-and-butter turn for the maximum culture and profit to those who seek only scientific training, and in whom the great point is, to instil a genuine love of science for its own sake, and not as an instrument with which to make money.

We will now glance, for a moment, at the financial aspect of the question, for it behooves an economical, conservative people like that of Michigan, to look carefully to the probable cost before embarking in a new enterprise, and bearing on this point I will relate an anecdote: An eminent University President, not long ago, sent for an equally eminent geologist and mining engineer, to consult with him regarding a "mining department" it was proposed to establish in the young, growing University; and first, what would be the probable cost of fully organizing, equipping and endowing a first-class school? "Not less than one half million dollars," answered the man, who was familiar with all the great mining schools in the world, and had been employed professionally on three Continents. As this sum was somewhat in excess of the entire fund at the disposition of the University, the subject of establishing a first-class mining department was not further discussed.

If any one questions this figure, let him ascertain what it has actually cost in money to establish the New York School; not counting the wear and tear of body and mind of Dr. CHANDLER and his associates.

If Michigan has half, or a quarter, of a million dollars to devote to higher education—and she cannot possibly make a better investment of money—would it not be best to consider whether it should not be devoted to making the State University what it pretends to be, and ought to be, in existing departments, rather than start out in a new and untried field? Unless it has greatly improved within a few years, there is not a department but what lacks money as well as other things; and yet it is undoubtedly the best institution of its kind west of the Alleghany mountains, and one of which the people of Michigan are justly proud. Sometime in the future it will need a mining department under its wing; whether such school be located at Ann Arbor or among the mines, like the great schools at Freiberg and Clausthal, is an open question, and its solution would perhaps properly turn on whether the proposed school be strictly professional, or a general scientific school, in which the sciences involved in mining and smelting are taught.

Having given some of my reasons for not favoring the attempt at this time to establish a "school of mines" in Michigan, I will now sketch in brief my views of a technical school which may aid in training a class of men that Michigan, and most other Western States, does need very much, and of which she has hundreds of self-trained men. I refer to explorers or prospectors, land surveyors, mine foremen, founders and furnace men; men who, as a class, occupy a middle rank, if you please, between engineers and superintendents and operatives; the non-commissioned officers of the great army of civilians who are marching to the conquest of the West. They are to professional engineers what ordinary builders often are to architects, and as builders are frequently their own architects, so are these men often their own engineers.

I will speak of the class with which I am best acquainted—prospectors and miners. Such men have not the time, money, taste, nor necessary preparation, to take a three or four years' course in a professional school; but many of them could and would avail themselves of an opportunity to spend a winter, or per-

haps more, in an institution where they could be taught the elements of those sciences which underlie and explain their callings, and where they *need not be taught* what they do not want. They do not want the higher mathematics, nor quantitative analysis, either wet or dry; but they do need to become thoroughly familiar, especially, with the physical characters of the more common minerals, ores, and rocks in their prevailing varieties, amounting to perhaps 300 or 400 specimens. They do not need to know those rarer minerals which have no economic importance, and are not essential constituents of rocks. They should know so much of practical qualitative analysis and blow-piping as will enable them to determine the few common ores and minerals which cannot be determined by their physical characters alone. The pocket-knife and magnifying-glass are, however, their main dependence, and the only instruments used in ninety-nine per cent. of the field determination of rocks and minerals; with their use they need become perfectly familiar. I have known a graduate of an engineering school, who afterwards attended a winter's course of lectures at a mining school, and had in the aggregate read, and knew, a large amount of geology, who did not know one rock from another; and I have known illiterate wood men who knew all the rocks and ores in their range of country at sight.

DANA'S *School Mineralogy* (which should be revised) contains quite enough on this subject, as it does half enough on lithology. The teaching must be from the things themselves almost entirely. If the man learns to recognize granite at sight, let others decide what is the variety of mica, and whether the felspar be orthoclase or oligoclase, and speculate as to the origin of the rock. That is properly another pursuit; more noble, and, possibly, in the end more useful, but still different, and not to be attempted by the class of men we are considering. If they learn to judge of the quality of an iron ore within an error of five per cent., with the aid, perhaps, of a specific gravity determination made on a large lump with a spring balance in the woods, it is of more practical use to an explorer, than if he could, in a well fitted laboratory, determine phosphorus sufficiently accurate for the Bessemer process.

A mine superintendent, or foreman, had usually better know how to treat a sick horse, than to know logarithms; and a smattering of common and statute law and legal forms is of vastly more use than the laws of chemical combination. A mining engineer may be able to make the plans and specifications for the construction of a rolling mill which shall be capable of producing 100 tons of rails per day, but if he cannot extemporize a blacksmith shop in the bush, when an old hat has to do duty as bellows, wherewith to fan a fire of hemlock bark, a boulder of quartzite as anvil, and with one pick as hammer with which to sharpen another, an important exploration may fail from dull tools. It is ten times more important for a prospector, as such, to have the physical strength, skill of hand, and *blind judicial faculty of mind*, that enables him to select, by numerous chippings or borings, from every part of an ore exposure, a sample for analysis, which will afford a truly *reliable working average* of the deposit, than to have mastered LYELL'S exhaustive *Principles of Geology*. A portion of such an *average sample* can be sent by mail to any one, or better, two, of the well-known reliable chemists of our cities, and the results will be speedily returned.

To do good analytical work, a man must have a properly fitted laboratory, and be constantly in practice, and very few professional engineers, miners, or smelting works, have a sufficiency of this work to employ one person constantly; hence it is usually found best to send assays away to be made by professional analysts. At least, this is my observation and experience.

A prospector need not understand astronomy, nor navigation, nor geology, nor triangulation, but he must be able to travel through the woods with a pocket compass and imperfect maps, and not get lost; otherwise, he is of little use in the field. Therefore, he must know the elements of land surveying and topography, especially how to make rough topographical maps, by means of a pocket compass and pacing. The common use of the level and barometer should be added. Practical book-keeping should also be taught, as a knowledge of accounts lies at the basis of all business success. I knew one graduate of a mining school who could not make out a receipt for his month's wages in proper form, although he could demonstrate the binomial theorem at the word.

But I have no idea of sketching a curriculum of study here, and only wish to indicate the general character and spirit which it seems to me should pervade such a school. Nor is there anything farther from my intention than to speak disparagingly of science or scientific training. I believe fully that it lies at the basis of successful mining, as of all other human callings; but I still recognize the fact, that there is a phase or period of American mining—the finding and opening of mines—which has so far constituted a large portion of the business for which a thorough scientific training not only does not especially fit a man, but, on the contrary, it, to a certain extent, *unfits him*, by giving him a distaste and contempt for the rule of thumb, makeshifts, and expedients, the rough-and-tumble fight with nature, so to speak, out of which come our mines.

Whatever the reason, it is nevertheless a fact, that successful "mining men" in America have not usually come from the scholastic, highly cultured men of varied information, which it is the usual aim of schools to produce. It may be said that I am here confounding superintendents and agents with engineers, the duties of which are different. I only answer that no man can be a successful superintendent who is not, at the same time, something of an engineer, and our best superintendents have usually been practical engineers.

When the ore deposit is found and opened, the location built up, smelting works erected, and lines of communication established; when the pioneering is done, the ship built and launched; when the mine is brought into a finished condition, somewhat like the mines of Europe, then the graduate of a European mining school, or of an American school founded on the same system, can take the mine and run it—can sail the ship. This is to be expected, for no new mines are being opened in Europe; it is only to conduct old ones that engineers are wanted.

How to build mines, so to speak, out of the raw material, is not taught in any mining school so far as I am aware, and, perhaps, it cannot be; but this is, as has been before remarked, by far the *most important* part of the business in America; for it is here that the foundation is laid for the success of the enterprise. If too much money is invested in "getting a lodgment,"—to borrow a military term, the enterprise will have to carry forever too heavy a load of capital, and no adequate return can be made. If the deposit of ore does not average rich enough, or is so inaccessible as to cause undue expense in mining then the enterprise must fail from another cause.

I submit that the engineer who cannot give valuable advice and practical assistance in this part of the business, is not entitled to be called an engineer at all. I am of the opinion that the American mining school which first successfully establishes a chair of "Practical Prospecting," using the term in its widest sense, so as to cover all preliminary mining operations, would soon be rewarded by turning out the most useful and successful graduates. If, in addition, it is made an invariable rule that no mining or smelting degrees be given, except to men who have had at least one year's practical experience in the profession, and that previous to the last year at the school, in which last year the studies should be mostly optional, the end would be further promoted.

I have seen great mistakes made by purely practical men, who are often, unfortunately for themselves and employers, imbued with a distrust in science, but I have seen greater ones made by purely scientific men, who had a contempt for the practical methods of their subordinates. The man who unites in himself both scientific and practical knowledge, or who has the rare power of being able to avail himself of those qualities in others, which he himself lacks, will, of course, oftenest succeed. My view, in brief, is to afford the opportunity to practical men, who have already selected and entered on their callings, to acquaint themselves with the methods of scientific investigation, and to learn the elements of those sciences which bear directly on their pursuits. I venture the prediction that if such a school were established in Marquette or Houghton, it would gather together in the winter a number of the most intelligent, enterprising, and promising young men in the Lake Superior mining regions, who would eagerly study and digest all the professors had to say or show, and they would, as the result, be much better miners, prospectors, and furnace-men, than if they had not such advantages. These men do not care for dip'omas or degrees, or for purely scientific investigations; their aim would be simply to perfect themselves in their *trades*, so that they could earn more money, be more useful, and thus deserve promotion.

I have occasionally met men of this class who had a genuine love for science, and who, introduced to the methods of scientific investigation through such a school, would find means of following their bent, and eventually attain eminence. I am not sure but that the percentage of such would be as large from the proposed school as from those with more pretention and higher aims; for there would be a process of natural selection in filling such a school with students, all of whom would go of their own accord, and usually at their own expense, instead of being sent at the expense of parents, as is the case with a large majority of the students in professional mining schools.

Speaking from the double standpoint of engineer and owner—employed and employer—I know that twenty men so trained would find profitable work in the Lake Superior mineral region, where one professional engineer would, and it strikes me as legitimate and desirable, that Michigan should help in training up her poor young men to thoroughly understand this business of conquering her wilderness and developing and utilizing her immense mineral resources. It is not commanding officers that are wanted, for they are born, like poets, so much as intelligent, trained non-commissioned officers, to guide and direct the rank and file of her hardy sons. One per cent. of the millions of money that have been sunk and wasted in fruitless explorations and abortive mining, on the Upper Peninsula, would endow such a school magnificently.

A school to furnish the kind of instruction here contemplated, is evidently not a "School of Mines" in the present acceptance of the word; and I am fully persuaded that it would be better to start with this humble, practical, economic aim, than to attempt to Americanize and bring down or up to the actual wants of the case, any existing school. I can conceive of the first growing into a modified and useful form of the second, but not so easily of the regular schools "degenerating," the Faculty might naturally say, into the technical school for working men.

If these views are not sound, I beg that MESSRS. HULBERT, SMITH, EMERSON, WHITE or WOOD, of the Copper Region, or MESSRS. WHITE, ELY, KIDDER, HALL, MORSE, MERRY, BREITUNG, JOHNSON, HOUGHTON or DICKINSON, of the iron region of the Upper Peninsula, will correct me. These gentlemen, with many others equally well informed, whom I could name, have spent the best part of their lives in developing the mineral resources of Michigan, and know what kind of men they require to help them in the work. I trust they may be heard from on this subject on which they are so thoroughly capable of giving valuable advice, and have so large an interest.

I am of the opinion that it will be wise to make haste slowly in this business; let it be thoroughly canvassed and a feasible plan matured before the expenditure of money begins.

Dresden, Saxony, May 2d, 1875.

Notes.

Russian Manufactories.—A report recently presented to the Technical Society of St. Petersburg shows that a large portion of the manufacturing establishments of Russia are in the hands of foreigners. In the district of St. Petersburg, for instance, foreigners possess 28 out of 32; in the province of Moscow, 22 out 47; in the district of the Vistula, 6 out of 14; and in the Baltic provinces, 21. The total number of works for the construction of engines in Russia, without counting the Imperial establishment, is 167, three-quarters of which number make locomotives and other railway plant, while the remaining quarter constructs agricultural engines and appliances, and other machines. The larger portion of the establishments is situate in Poland; next in order come the Baltic provinces, then the provinces of the Center and of the South. The 167 establishments possess 422 engines and 476 boilers, of a total force of 6,162 horse-power, employing 41,382 workmen. These establishments consume yearly 133,800 tons of pig iron, 164,898 tons of wrought iron, and 127,000 tons of fuel, of which about 100,000 tons consist of coal and coke.

Boilers Lined with Copper.—An Austrian railway engineer has had the idea of protecting the boilers of locomotives against incrustation by means of copper plates. The front and back plates of the bottom of the boiler of an engine were covered with a sheet of copper 1 millimetre in thickness, the middle plate of the boiler being left unprotected. The engine was worked for two years on a portion of the line of the State railways where the water was of very bad quality. When the tubes were taken out the incrustation was found to be 10 millimetres in thickness on the surface of the iron, and only 2 to 3 millimetres thick on the copper plates. The iron was in many places corroded to the depth of 1½ millimetres, while the copper was entirely unaffected, and the iron plate beneath it, when uncovered, looked perfectly new. The particles of incrustation were larger on the iron than on the copper. The cost of the copper covering is stated to be from 250 to 750 fr. per boiler. Another engineer, who examined and reported on the arrangement, says that the duration of the boilers is doubled or tripled by the application of the copper plates, which afford extraordinary security against explosion. The incrustation is much less on copper than on iron and steel, which is porous and slightly oxidized, and consequently the vaporization is more complete, and there is a corresponding saving of fuel. In the construction of a boiler to be lined with copper the iron plates may be of less thickness without risk; the weight of the boiler is thus considerably reduced, and, lastly, the expense for repairs is considerably diminished.

[This combination of copper and iron in iron ships has been found very injurious on account of the galvanic action between the two metals, and we would need more satisfactory experiments with water of different qualities, and particularly with the acid water common in coal mines before placing much value on this "improvement."
ED. E. & M. J.]

Silver-Lead Smelting at the Winnamuck Smelting Works.*

CONCLUDED FROM PAGE 460.

The pits, or roasting heaps, were put up in the usual manner, on a double layer of wood. On 8 cords of this there were generally piled about 250 tons of coarse ore; four to six chimneys, consisting of small sticks of wood, having been constructed in the heaps to facilitate the lighting of the heap at the start, and insure a good draught. Such heaps usually burned from two to three months, and were put up at a cost of 75c. per ton. At the time of writing this article, 400 tons of this roasted ore are being shipped, having been sold to other smelting works at a net profit to the Winnamuck Company of $40 per ton.

The first roasting stalls put up were built of pieces of slag, cemented by a little mortar, and consisted simply of two side walls, five feet six inches high and eighteen inches thick, with an inclined floor between. They were used principally for the roasting of matte receiving, at the starting of a fire, 1½ cord of wood, and 50 to 70 tons of matte, which burned through in about four weeks. The cost of roasting in these stalls was 1$ per ton.

Two covered, or arched stalls, having a stack in the center to carry off the fumes gave especially satisfactory results. The average cost of construction of the stalls was $58 a piece. An experiment made with a shaft roasting-furnace, with interior fire-place, to be charged at the top and drawn at the bottom, was not very successful. As long as ore was roasted in it, carrying a considerable portion of galena, it did very well; but with a large amount of pyrites intermixed, the heat was so raised as to bake and sinter the whole contents, which had then to be removed with bars. This proved too expensive, although the furnace did not consume any fuel after being started. When the draft was shut off below, and a number of openings in the sidewalls were relied upon to furnish a limited amount of air, the latter could not penetrate to the center, while the ore remained unaltered.

To obtain a tolerably good product in only one fire, all the roasted ore or matte from heaps, stalls or kilns had to be picked over, and all the unroasted and partially roasted stuff had to be put back into a second fire.

The average assay of lead matte (first matte) produced during the year was 12 per cent. of lead and 56 oz. of silver per ton.

By the concentration of this first matte, produced during a period of 3 months, about 30 tons of copper-matte, containing 12 per cent. copper and 130 ozs. silver per ton, were obtained. This product was sold at about $115 per ton.

Slag assays show during the year an average of 3.68 per cent. lead, and 2.41 oz. silver per ton.

A dust chamber was added to the works in January, 1874, but being of an inferior construction, and, first of all, too small, it never did the services required of such an apparatus, and the saving of flue dust did not amount to even 50 per cent. of the whole. About 110 tons were collected during the year, assaying in silver 24.1 ozs., in lead 26.5 per cent. It seems a very curious phenomenon that the contents in lead of the flue dust should be higher than those of the ore, and this can only be explained by the fact, that the ore was mostly in the shape of fine carbonate and sulphate, and that, as the condensing capacity of the chamber was small, the lighter gangue was blown beyond the chamber, while the heavier lead-ore particles remained.

An entirely different slag from that produced when iron ore and limestone were the only fluxing materials was, of course, obtained after roasting processes had been thoroughly established.

An analysis made in June, '74, shows 38 per cent. silica; another, commenced in November, but never finished, is as follows:

Silica	25.31
Protoxide of iron	41.97
Alumina	not determined
Sulphide of iron	6.25
Sulphide of lead	not determined, but present
Lime	21.06
Zinc	0.56

This seems to show, that the roasting was entirely insufficient.

The following is an average of ore, fluxes and fuel since the introduction of roasting:

Winnamuck oxidized ore	110 lb.
Winnamuck roasted "	110 "
Outside ores	180 "
Flue dust	20 "
Iron ore	20 "
Lime	40 "
Slag	80 "
	560 "
Coke	70 "
Charcoal	1 1-5 bushel.

Charges before roasted ore was used, early in 1874, were as follows:

Winnamuck oxidized ore	200 lb.
Whasatch ore	100 "
Iron ore	90 "
Lime	40 "
Slag	20 "
	450 "
Coke	80 "
Charcoal	1 1-5 bushel.

It is plainly seen that a great advantage was gained by the introduction of roasting over the former way of smelting. It not only reduced the consumption of costly hematite to a minimum, but there was a decided gain in the use of fuel. The roasted ore and matte imparted such a heat to the entire smelting charge, that the weight of charges could be increased by about one-third, and at the same time a reduction of the quantity of fuel was rendered possible.

The average number of charges put through in 24 hours was 105.

The quantity of matte produced with such charges was about equal to that of the work-lead. This was certainly a very great, but only a temporary, loss. About 400 tons of matte were worked over during the year.

* From the Report of the U. S. Commissioner of Mining Statistics for 1874.

The following ores and matte were smelted during 1874:

	Tons net.
Winnamuck oxidized ore	2124.76
Winnamuck roasted "	708.65
Winnamuck roasted matte	400.00
Whasatch ore	747.48
Ore from different mines	1699.65
Total amount smelted	5680.54

The consumption of smelting materials is recorded as follows:

	Tons.
Ore	5680.54
Iron ore	1550.59
Limestone	909.45
Slag	921.78
Total material smelted	9062.36

Of fuel there was used including shortage and waste:

Coke	1723.23 tons
Charcoal	107, 521 bushels.

The losses of lead and silver can be calculated only approximately, there being still about 130 tons of lead-matte on hand, containing 70 to 80 oz. of silver and 12 per cent. of lead. Leaving this matte out of the question altogether, the losses of silver amount to 14.6 per cent. and of lead to 21.1 per cent. It is clear, that after thoroughly sampling the matte, and giving it its actual value in dollars and cents, these figures will be materially modified.

The total silver-lead production during 1874 amounts to 893.601 tons, representing a money value of $290,706.66.

The machinery at the Winnamuck works has been increased in August by a new 60 horse-power engine and boiler, and a new No. 5 Root's Blower. The old 20 horse-power engine, after over three years' continual use, was beginning to give out, being too weak for the severe work required of it.

The total improvements at the works and additions thereto made during the year are enumerated as follows:

One 60 horse-power steam engine, boiler and buildings.
One No. 5 Root's blower, counter-shafts, etc.
Two reverberatory furnaces, flues, stack and buildings.
Eight roasting stalls, and roasting kiln.
One dust-chamber (sheet-iron).

These, together with an entirely new water-course, represent an expenditure of nearly $40,000. The old No. 4 and No. 5 Root's blowers are still at the works, and intended for auxiliary blast engines.

In conclusion it should be said that the whole future of the Winnamuck works rests with a complete system of appliances for separating the sulphuretted ores. The time is very near when no other ores but these can be extracted from the mine.

It is not concentration, as commonly understood, which is needed, but a separation of the different useful minerals. The zincblende even is valuable in this case, and must not be thrown away.

A separation of the minerals in the Winnamuck are effected in a gold pan, some time ago, illustrated this fact plainly enough.

Three different samples were obtained by the washing, the assays of which showed as follows:

Galena	68 per cent lead, 62 oz. silver
Pyrites	59.5 oz. silver
Zincblende	46.1 oz. silver

This, of course, does not represent an average of the ore in the mine. The data are simply given to show the relation of the different minerals as to their contents in silver. If the zincblende can be sold at reasonable prices to amalgamating mills provided with a Stetefeldt or any other good roasting furnace, there will be no difficulty in treating the two remaining portions profitably, by smelting, and making a complete success of the whole enterprise. This way of working and preparing ores in a cheap manner previous to subjecting them to metallurgical treatment is, however, advisable, not only for the Winnamuck works, but really for the majority of Utah mines. Many of the Bingham Cañon mines have already encountered the above mixture of sulphurets in their lower levels, and all the rest are almost certain to find it, or perhaps something worse, in the near future.

Statement of Ore, Bullion and Base Metal Yield for May, 1875.

UTAH.	
Gold dust, estimated	$ 1,000
Silver bars	85,000
Lead, rich in silver	349,000
Copper and lead	8,000
Ore shipped out of the Territory, silver, lead and copper	90,000
Iron ore	400
Coal	41,000
Total for the month	$574,400

NEW MEXICO.	
Gold dust and retort	$ 10,000
Silver bars	59,000
Ore shipped	67,000
Total for the month	*$106,000

COLORADO.	
Gold and silver bullion, bars	$162,000
Gold dust and retorts	120,000
Lead and copper, free from gold and silver	1,200
Ore shipped out of the Territory	194,000
Coal	128,000
Total for the month	$605,200

SUMMARY:	
Utah	$574,400
New Mexico	106,000
Colorado	605,200
Grand Total	$1,285,600

* There is an error of 30,000 tons in these figures, which we are unable to trace, and which we must leave to our friend, of the Georgetown *Mining Review* to explain.

The Ore Market.

Prices do not show any great change, being already at high figures Shipments East are confined to the very highest grades of ore, and although, as per above statement, these have amounted to nearly a quarter of a million of dollars, it is probable that as the large reserves that have accumulated during the winter are worked off,

this will show a considerable falling off, and a corresponding increase will be made in the amount of bullion produced at home. The following are ruling prices for ores:—

GEORGETOWN, COL.			ALMA AND BLACK HAWK. B. & C. SMELTING WORKS.		
No. of oz.	Price per oz.	Price per ton.	No. of oz.	Price per oz.	Price per ton.
100	$ .60	$ 60	50	$ .45	$ 22 50
150	.84	126	70	.63	44 10
200	.92	184	100	.80	80 00
250	.96	240	150	.90	135 00
300	1 00	300	200	1 00	200 00
400	1 04	4.6	250	1 02	255 00
500	1 06	530	300	1 04	312 00
1000	1 11	1110	500	1 09	545 00
			1000	1 54	1140 00

SALT LAKE, UTAH.

Salt Lake prices are regulated as much by the percentage of lead as of silver, and may be stated about as follows: Ore containing 45 per cent. in lead, and 60 oz. in silver, will sell for $60 per ton. If the ore goes above 45 per cent. in lead, add 75 cents for each one per cent. If it goes below 45 per cent. in lead, deduct 75 cents for each unit, down to 30 per cent. If the ore assays above 60 oz. in silver, the price increases per ounce. Ore containing 44 per cent. of lead and 39 oz. in silver, sells for $1 12 per ounce.

AUSTIN, NEV.

Reduction charges, $35 per ton, after deducting 20 per cent. of the assay value of ores carrying 40 oz. of silver, or less, per ton; and 18 per cent. of assay value of ores of a higher grade.—*Georgetown Mining Review.*

Notes.

The Gum Boots, so universally worn by gravel miners in California, and elsewhere, have latterly been lined with green flannel, the dye of which is arsenicated. Many persons have been poisoned thereby, some fatally.

Carrying Coals to Newcastle.—The Quinnimont furnace is shipping iron to Ironton, Pittsburgh and Portsmouth, and making a large profit selling at a price that would be ruinous to blast furnaces of those cities.—*Charleston (W. Va.) Manufacturer.*

The James River Coal Company's Property, at Richmond Va., was sold under deed of trust for $37,250, and the liens by E. W. WESTERN, of Scranton, Pa. It is reported that the colliery will be more vigorously worked, and under much better auspices.

The Oakwood Shaft, the second opening of the Prospect Shaft of the Luzerne Coal and Iron Company, near Wilkes-Barre, has reached the bottom bench of the Baltimore seam at a depth of 615 feet. This, with the connection of the two shafts, will give ventilation to the mine, as required by the laws of Pennsylvania.

English Coal Cutters in Ohio.—Some English parties are about to visit the Ohio coal regions for the purpose of introducing a coal cutting machine which they claim will take coal out of thin veins at a large profit, as also work to the best advantage anywhere. They are also willing to guarantee that the machine will not strike for higher wages.—*Cleveland Manufacturing and Trade Review.*

Demand and Supply of Gas by Philadelphia Gas Works.—From the Trustees' Report for the year 1874, we get the following facts and statistics: Whole manufacture of gas for the year, 1,766,268,000 cubic feet. Average per day, 4,840,000 cubic feet. Average daily consumption du ing the heaviest month of the year, 6,219,477 cubic feet. Daily manufacturing capacity of the Works, 9,000,000 cubic feet. Maximum storage capacity, 7,300,000 cubic feet.

The Vancouver Coal Mining Co. mined in 1874:

	Tons.
From Douglas Mine (Mainland)	16,210
From Lower Seam	1,562
Fitzwilliam Mine (Newcastle Island)	4,453
Total	22,175

Profits made, £2,331 18/6.

The Strike Over in the Gas Coal Region.—The strike at the works of the Westmoreland and Penn Companies, at Penn, Irwin, and Larimer stations, on the Pennsylvania Railroad, is now over, and nearly nine hundred men are employed in the mining of coal, producing daily about twenty-five hundred tons. The numbers employed in the several pits are as follows: Westmoreland—Old Larimer, 165; Bald Eagle, 103; Southside, 114; Springhill, 40; Slope, 115. Penn—Yough shaft, 112; shaft No. 1, 93; Southside at Penn, 140.—FRANK COWAN'S PAPER.

Cold Brook Rolling Mills Company.—The annual meeting of the stockholders of the Cold Brook Rolling Mills Company was held at Moosepath, St. John, on Saturday, the Vice-President, Hon. T. R. JONES, in the chair. The report showed a surplus profit (after paying dividends at the rate of 12 per cent. per annum) of $52,731 34. Attached to this was a certificate of some of the leading shipbuilders and shipsmiths, to the effect that they have used both the common and refined iron manufactured by the Cold Brook Manufacturing Company, and find it in every respect fully equal to the best English brands; that the iron is of good fibre and very tenacious, and having thoroughly tested it, they prefer to work it to any other brand, as they find less trouble and better results. A half-yearly dividend of 6 per cent. was declared. The principal officers were re-elected.—*Halifax (N.S.) Chronicle.*

The Commissioner of the Land Office, June 19, decided the Ortez Mine Grant in the Os Mountains, near Santa Fe, New Mexico. The original claim was first filed in December, 1833, and covered a grant of 69,458 acres. The Commissioner says a careful examination of the law shows that the claimants had no valid title. The one which they acquired was obtained upon the recommendation of the Surveyor-General of New Mexico, which was afterward confirmed by Congress in an act, in which a clause was incorporated whereby the United States relinquished its claim, without injury to any other claimant. Were it not for this act of confirmation by Congress, the Commissioner would feel justified in deciding adversely to the whole claim. Under the circumstances he has ordered a new survey, starting from the same points, but which reduces the area just one-half. The Surveyor of New Mexico has been notified of the decision, and 60 days have been allowed for an appeal to be taken.

Coal and Iron Receipts at Milwaukee during 1874.—We take the following from the report of the Chamber of Commerce: "There was a surplus of coal carried over from 1873 to 1874, and as the iron furnaces and rolling mills of the city were idle a good share of the year, the consumption was largely diminished. The decrease in receipts was 41,110 tons, and the total amount received as below:

	Tons.
From Buffalo, by Lake	77,414
" Cleveland, "	54,323
" Oswego, "	25,083
" Erie, "	11 483
" Sandusky "	3,119
" Ashtabula, "	3.649
" Other Ports "	2,584
By Railroad	11,082
Total Receipts	188,737

"The receipts in 1873 were 229,184 tons; 1872, 210,194 tons; 1871, 175,526 tons; and in 1870, 122,805 tons.

"The serious prostration of the iron interests of the country during the past year is exemplified in the large decrease in the movement of iron ore. Receipts of the latter in this city in 1874, amounted to only 39,082 tons, against a total of 103,427 tons in 1873. Of the amount received here in 1874, 6,986 tons were reshipped to other points, viz: 3,570 tons by Lake to Chicago; 350 tons to Wyandotte; and 3,066 tons southward by rail."

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending June 19:

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co.	74,916	1,464,131	52,655	1,181,482
D. L. and W. RR. Co.	86,296	1,512,270	59,239	1,217,238
Penn. Coal Co.	32,707	583,911	31,753	572,246
L. V. RR. Co.	9,373	370,456	15,295	475,348
P. and N. Y. RR. Co.	4,304	59,406	218	34,293
C. RR. of N. J.	17,864	216,945	40 559	640,010
Penn. Canal	..	..	..	..
Lack. and B. RR.	..	63,596	..	97 019
	225,514	4,262,075	199,719	4,218,636
Lehigh Region.				
L. V. RR. Co.	10,906	187 597	75,696	1,456,854
C. RR. of N. J.	425	7,401	20,287	461,107
D. H. and W. B. RR.	2,056	27,326	1,698	12,524
	13,387	222,324	97,681	1,930,485
Schuylkill Region.				
P. and R. R. RR. Co.	52,229	595.675	119,864	2,230.475
Shamokin and Lykens Val.	33,629	483,473	23,187	351,990
	85,858	1,075,147	143,051	2,582.471
Sullivan Region.				
Sul. and Erie RR. Co.	..	5 557	1,422	12.933
Total	324,759	5,569,104	441,873	8,741,525
Increase	..	..	..	..
Decrease	117,114	3,175,241	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending June 19, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week.	Year.
Cumberland Region, Md.	Tons.	Tons.
Tons of 2,240 lb	58,661	950,812
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	7,281	13*,630
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	4,335	102,379
*East Broad Top	418	20,834
Clearfield Region, Pa.		
*Snow Shoe	755	35,134
*Tyrone and Clearfield	18,966	353,056
Allegheny Region, Pa.		
*Pennsylvania RR	3,889	115,228
Pittsburgh Region, Pa.		
*West Penn. RR	4,030	95,536
*Southwest Penn. RR	61	4,102
*Penn. & Westmoreland gas coal, Pa. RR.	12,221	207,293
*Pennsylvania RR	10 574	167,586
Kanawha Region, W. Va.		
Chesapeake and Ohio RR	5,543	75,254

* To June 14.

The Production of Coke for the week ending June 14.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	273
Alleghany Region	..	53
West Penn. RR.	548	23,184
Southwest Penn. RR.	13,317	229,644
Penn. & Westmoreland Region, Penn. RR.	862	12,140
Pittsburgh, Penn. RR.	2,508	44,616

The receipts at Buffalo, via L. S. and M. S. RR. for the week were 2,645 tons. The exports by Lake were 4,050 tons, and imports 775 tons.

The Exports of Coal from Baltimore for the week were 000 tons, and for the year, 24,018 tons as compared with 52,068 tons to the corresponding time in 1874.

The receipts at Port Richmond for the week were 20,000 tons, shipments 15,000 tons, and balance on hand 7,000 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 47,217 tons.

Belvidere Delaware RR. report:

	Week.	Year 1875.	Year 1874.
The receipts of coal at Coal Port (Tr'ton)	..	206	121 813
" " " South Amboy	179	20,112	326,604
Shipments of Coal Port (Trenton)	..	196	118,710
" South Amboy	..	98 503	403,338

Receipts at Greenwich, Philadelphia:

	Bituminous.	Gas Coals.
Receipts	9.359	9.360
Shipments	9,657	10,316
On hand	2,487	2,441

Shipments from Pictou, N. S, for the week ending June 12:

	Tons. Week.	Year.
To United States	525	2143
" West Indies	—	—
" South America	—	—
" Canada	5873	10923
" Other Provinces	2761	6220
	9,159	19 292

Shipments from the Block House, Cow Bay, C. B., to the following destinations, for the week ending June 14:

	Week.	Year.
Provinces	233	2610
West Indies	320	806
	553	3416

Production of Bituminous Coal, 1875.

Tons of 2000 lb.	Previous.	April.	Total.
Blossburgh Region	69,796	30,554	100,350
Barclay Region	80,474	22,512	102,986
McIntyre Coal Co.	15,807	7,102	22,909
Broad-Top Region	47,747	15,712	63,459
Cumberland Region	288,602	277,321	565,923
East Broad Top	7,198	6,074	13,272
Snow Shoe	19,384	8,324	27,708
Clearfield Region	198,013	62,469	260,482
Alleghany Region	44,108	28,488	72,596
Pittsburgh Region.			
West Penn. RR.	46,255	20,043	66,298
Southwest Penn. RR.	1,484	963	2,447
Gas Coal, Penn. RR.	148,198	6,588	154,786
Pittsburgh Coal, Penn. RR.	64,593	35,367	99,960
Saw Mill Run RR	12,283	11,996	24,279
Cleveland and Pittsburgh RR.	73 579	33,176	106,755
Pittsburgh, Cincinnati and St. Louis RR.	184,347	51,930	236,277
Erie and Pittsburgh RR.	23,877	4,748	28,625
Pittsburgh, Fort Wayne and Chicago RR.	51,381	23,435	74,816
Pittsb'g. & Castle Shannon RR.	16,732	12,271	29,003
A. Y. & P. RR.	1,001	275	1,276
Pittsb'g and Connellsville RR.	81,119	43,137	124,247
Monongahela Nav. Co.	..	..	..
Keeling & Co.	26,896	..	26,896
Wettengell & Gormley	6,797	..	6,797
J. W. Carlin & Co.	..	..	..
Pittsburgh Va. & C. RR	9,747	2,457	12,204
Allegheny Valley RR.	92,681	..	92,681
Gray & Bell	3,461	..	3,461
St Louis Region.			
St. Louis A. and T. H. RR. and Branches	95,064	..	95,064
Illinois and St. Louis	..	..	..
Indiana North and South RR.	..	264	264
Evansville & Crawfordsville RR	7,634	1,895	9,529
Ohio and Mississippi RR.	39,696	..	39,696
Scwanee Region.			
Tenn. Coal and RR. Co.	18,239	8,846	27,085
Kanauha Region.			
Chesapeake and Ohio RR.	13,982	30,005	43,987
Warrior Region, Ala.			
South and North Alabama RR.	10,720	2,999	13.719
Cahaba Region, Ala.			
South and North Alabama RR.	4,490	660	5,150
S. R. and D. RR	3.471	..	3.471
Chicago B. and Q. RR	109,819	32,644	142,463
B. and M. R. RR.	22,774	6,078	28,852
Union Pacific RR.	61,369	..	61,369
Keokuk and Des Moines RR.	..	..	..
Denver and Rio Grande	6,982	1,696	8,678
Cairo and St. Louis	3,106	..	3,106
	2,013,27	789,765	2,802,926

COAL TRADE REVIEW.

Duties.

Anthracite free, *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.
All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.
Not otherwise provided for, per ton, 40c. gold.

NEW YORK, Friday Evening, June 25, 1875.

Anthracite.

There is no lack of activity among the mining companies, but the shipments being made are mostly on account of orders taken earlier in the season, the new orders coming to hand being unimportant. The indications are that before long there will have to be considerable curtailment in the production by some of the companies, or a large accumulation of stocks will occur.

The Combination will now have to pass through a new test of its cohesive strength. Two prominent members of the Combination have been working their mines to full capacity, securing good prices for their coal, and have in every way been prospercus, so that their stocks have reached a high figure. Supposing that it be the intention of the Combination to allot to each company a certain proportion of the year's business, and observing that the consumption of anthracite coal has greatly fallen off, the companies that have been at work have already supplied the greater part of their quota, and for the balance of the year their works would have to stand almost in idleness. The question whether they will submit to remain in idleness, or break the Combination, or what is the nature of the agreement which provides for this case, excites much comment.

Prices —Circulars for July have been issued by all the large companies and by the Lehigh Coal Exchange. Prices at the New York shipping ports are as follows:

	Lehigh.	Wyoming & Lackawanna.	Pittston.
Lump	$5 55	$5 00	$4 90
Steamer	....	5 10	4 90
Grate	5 45	5 20	5 00
Egg	5 45	5 35	5 10
Stove	5 80	5 80	5 60
Chestnut	5 00	4 80	4 65

The Philadelphia and Reading Coal and Iron Company's prices, f. o. b. at Port Richmond, are as follows:

	Lump.	*Steamer.*	*Broken*
Hard white ash coal	$4 50	$4 60	$4 70
Free burning white ash	4 50	4 60	4 70
Schuylkill red ash			4 90
Shamokin			— —
Lorberry			5 60
Lykens Valley			6 25

	Egg.	*Stove.*	*Chestnut.*
Hard white ash coal	$4 85	$5 30	$4 30
Free burning white ash	4 85	5 30	4 30
Schuylkill red ash	4 95	5 35	4 50
Shamokin	5 00	5 30	4 30
Lorberry	5 60	5 60	4 60
Lykens Valley	6 25	6 25	5 45

The above prices show advances ranging mostly from 5c. to 10c. per ton over the corresponding month of last year.

At the Mines.—The Lehigh and Wilkes Barre Coal Company have at last got their Wyoming men fairly at work; they are producing about 5,000 tons of coal per day, and expect to increase the quantity to 12,000 to 14 000 tons by the beginning of next week. Although they are cleaning up and making preparations to start their Summit Hill Works, no mining has yet been done there. The Susquehanna Coal Company, A. J. DAVIS and others, have not been successful in getting their men to work, but think they will in a short time. The Philadelphia and Reading Coal and Iron Company's report for Wednesday gave shipments from twenty-four of their collieries, and a large number of the individual operations are at work, although the miners resume with reluctance. The output from the Schuylkill Region is constantly increasing, and by the first of next month will have assumed pretty good proportions. We are unable to learn of a single case of resumption in the Lehigh Region, but it is anticipated that the men will turn in after the Fourth of July.

The military have been withdrawn from the coal regions.

A despatch says that Mr. PARRISH, of the Lehigh and Wilkes-Barre Coal Company, has consented to give employment to the leaders in the late strike; but that he has asserted that he will not, in the future, in any way permit the Miners' Union to dictate to him whom he shall employ or discharge, and that his mines will be kept open to whomsoever he may see fit to employ, be such persons union or non-union men.

The Philadelphia and Reading Coal and Iron Company have reduced the prices of mine supplies to a figure [illegible] actual cost. They will hereafter charge their men $3 per keg for powder, and $1 per gal. for whale oil.

Bituminous Coal.

There are but few orders being taken by the Cumberland, Clearfield or Broad Top mining companies. There are some inquiries, however, for bituminous coals, that may result in business later in the season. The Cumberland mines are producing about all the coal they can get cars for, while the Clearfield Region is constantly increasing its out-put. The Broad Top Region, however, is not working full. We note a sale of 1,000 tons of Broad Top coal, for shipment to Montreal, to be used on river steam-boats.

Foreign and Gas Coals.—From the present outlook there will be a few thousand more tons of American gas coal placed this season. Shipments continue fairly active on old contracts. We note the arrival of about 1,000 tons Reserve Coal, from Sydney, on order, and 250 tons of Springfield coal, from Dorchester, N B. The latter is on the market and held at $6, but it will be impossible to realize anything like that figure for it.

Freights.—From this port there is no material change; about $1 25 to Boston ruling. A slight advance is looked for, but there is nothing to indicate that it can be maintained. From Georgetown and Baltimore freights rule about as last week, although they are more firm than a few weeks ago. From Richmond, Va., to this port $1 70 is being paid on cannel coal. The rate from Cow Bay to New York is $2, and from Pictou to Portland $1 80.

Extracts from South American Mail.

RIO DE JANEIRO, May 25, 1875.—"Coal Our market, during the past month, has been very firm; there have been few arrivals and our stock, in consequence, is now very small. Quotations are: Newcastle and Cardiff 21 $000 per ton; Scotch and other brands, 18$000@20$000."

BUENOS AYRES, May 14, 1875 —"Cardiff coal in heavy stocks, price $13½; house coal scarce and salable at $15."

PERNAMBUCO, May 31, 1875.—"There are no sales to report; the few cargoes which have arrived being for account of companies. We quote Cardiff at 18 $000, and Lancashire 14 $000 per ton"

Philadelphia Coal Trade.

June 18, 1875.

Prices for July are as follows:—Lump, $4 50; Steamboat, $4 60; Broken, $4 70; Egg, $4 85; Stove, $5 30; Chestnut, $4 30. Compared to corresponding month of last year it is an advance of 5c on Lump, Steamboat, Broken and Egg, of 45c on Chestnut, and no change on Stove.

It seems to be pretty sure that an advance of toils of 25c per ton will take place July 1st.

On the other hand, the coal operators are getting less for their coal, the miners less wages, and the employees of the company less wages or salaries, so that this general squeezing all round is not for the purpose of giving cheaper fuel to consumers and assist industry, but for the exclusive benefit of "soulless corporations," whose officers are reported to contain large surplus funds after distributing big dividends.

The needs of the manufacturing interest call for a reduction, not an increase, in the price of coal, and it is to be regretted the coal companies have not adopted a more liberal policy.

The receipts of coal are increasing very slowly, showing that a good deal of cleaning up and repairing has to be done.

Freights, with larger receipts of coal, are stiffening a little, and $1 60 is paid to Boston. To Southern ports they remain as low as last quoted.

Wholesale Prices of Anthracite Coal for July f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 00	5 10	5 20	5 35	5 80	4 80
Pittston at Newburgh	4 90	4 90	5 00	5 10	5 60	4 60
Wilkesbarre at Port Johnston	5 00	5 10	5 20	5 35	5 80	4 80
Plymouth, R. A., *Net*	....	....	5 20	5 35	5 80	4 80
Susque. Coal Co. at Amboy W.A.	....	....	....	..	....	....
Kingston at Hoboken	....	....	..	....	....	....
Lehigh Coals.						
Old Company at Port Johnston	....	....	....	....	....	....
Old Company's Room Run "	....	....	..	....	....	....
Sugar Loaf "	....	....	....	....	....	....
Lehigh Coal Exchange "	5 55	....	5 45	5 45	5 80	5 00
Honey Brook at Elizabethport	....	....	....	....	....	....
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	....	....	....	....	....	....
†**Schuylkill Coals.**						
Schuylkill white ash	4 50	4 60	4 70	4 85	5 30	4 30
Schuylkill red ash	....	....	4 90	4 95	5 35	4 30
Shamokin white and red ash	....	....	....	5 00	5 30	4 30
Lorberry	....	....	5 60	5 60	5 60	4 60
Lykens Valley	..	....	6 25	6 25	6 25	5 45

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

Per ton.
Freight from Hoboken and Weehawken to New York ... 40c.
" " Elizabethport & Port Johnston to N. York. 45c.
" " South Amboy to New York 50c
*Freight on Lackawanna coal from Rondout to New York, boats or barges of the D. and H. Canal Co. 50c. per ton. The expense of towing vessels from New York harbor to Rondout and back will be borne by this Company.

†Freight from Port Richmond to New York (alongside) 85c. per ton. To Boston $1 50 to $1 60, and to Providence $1 25 to $1 35.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	....
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Baltim.	5 00	6 50
Despard, West Va., Nominal	4 75	6 50
Murphy Run, West Va., at Baltimore	4 75	6 30
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy.
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	30/	12 00
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Valo mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	....@....
Cumberland, at Baltimore	4 15@4 50	5 75@6 25
Clearfield, "Derby," "Kittanning," "Sterling," and "Eureka," at the mines, $1 25; at Greenwich, Phil.	4 60	5 65
James River, carbonite, Richmond, Va.	....	....
" bituminous, "	....	....

Retail Prices in New York.

Anthracite

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
*Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	6 50	6 75	6 00
Lehigh & Locust Mountain, del'd	....	....	....
Schuylkill Red Ash, del'd	....	....	....

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.
*Lackawanna grate is quoted 25c. per ton less than egg.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb		$23 00
Liverpool House Cannel " " "		.... 25 00
American Sterling " " "		.... 13 50
American Orrel " " "		15 00@16 00
Red Bank Cannel " " "		..... 14 00
Carbonite " " "		..... 12 00
Cumberland " " "		..... 9 00

Baltimore, Md. June 22, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$5 35	$5 20
Broken	5 35	5 20
Egg	5 05	5 50
Stove	5 80	5 05
Shamokin. (red or white ash), and "Boston," "freeburning white ash,		
Egg	5 65	5 50
Stove	5 82	5 65
Lykens Valley, red ash,		
All sizes	5 05	5 72

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2240 lb. $6 75@7 75.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 35 4 50
West Virginia f. o. b. at Locust Point	5 50
Youghiogheny Gas, f. o. b. at Locust Point	5 50
Swanton Coal, George's Creek	4 40

Boston. June 22, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 75	Westmoreland and Penn.	7 25
Caledonia	5 00	Waverly Co. Youghiogh'y.	7 25
Pictou	6 15	Cannelton Cannel	11 75
Block House	5 60	Cumberland	6 25@ 6 50
Red Bank Cannel	10 00	Anthracite	6 50@ 7 25
Glace Bay	5 00	" retail	7 50@ 8 00
Sydney	7 00		

The *Commercial Bulletin* of June 19 says:—"Coal is very dull and a shade easier, none but the very best lots of anthracite now realizing over $8 50 per ton. The receipts have fallen off from last week, but are still more than sufficient to supply the hand-to-mouth demand. Other kinds than Scranton have made their appearance, and the market will soon be liberally supplied with all varieties. Manufacturers appear to be strongly of the opinion that coal is too high, and will not purchase except to supply immediate wants. Many believe that the recent 'outrages' in the mines were instigated by the large companies for a purpose.

"Cumberland coal is arriving freely, and continues in very good demand. Several of the manufacturers who have begun to use this variety since the strike began are determined not to dispense with it even if anthracite should go lower, as they believe that the claim of the combination that its object is to secure steadiness in prices, and confidence in them among buyers, is a sham. Cannel coal is steady at previous prices, with sales in small

lots. Provincial coals are quiet. We note the arrival of the *Livonia*, from Cow Bay, with 487 tons. Freights are $1 40@1 50 from Philadelphia and New York and $1 50 @$1 60 from Baltimore.

"The total receipts for the week, 31,348 tons domestic and 487 foreign. Total receipts since Jan. 1, 263,270 tons domestic and 3156 tons foreign."

Buffalo, N. Y. June 22, 1875.

Reported by our Special Correspondent.

Prices free on board vessels there are as follows:

ANTHRACITE.

	Afloat.	F. O. B. Vessel.	Retail, Deliv'd.
Grate	....	$6 20	$7 00
Egg	....	6 20	7 00
Stove	....	6 65	7 45
Nut	....	6 40	7 20

Chicago, Ill. June 22, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

Retail prices per ton of 2000 lb. delivered to buyer.

		BITUMINOUS.	
Lehigh Lump	$10 00	Briar Hill and Erie	7 50@ ....
Lehigh prepared and car load lots	10 00	Walnut Hill (W.Va)	6 50@ ....
Lackawanna, Wilkes-Barre and Pittston*		Midway (West Va.)	....@ ....
Grate, egg and chestnut,	9 00	Cannel	....@ 9 00
Stove or range	9 50	Blossburg	8 00
		Indiana Block	6 00
		Hocking "Brooks"	6 00
		Wilmington and Illinois	4 50

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Cincinnati, O. June 22, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	10c.	—
Pomeroy coal	6¼c.	—
Cannel coal	16c.	—
Semi Cannel	9¼c.	—

The following are the retail prices delivered:

Youghiogheny	— c.	$3 35
Pomeroy	— c.	2 75
Cannel	— c.	5 50
Kanawha Semi Cannel	— c.	3 35
Anthracite	9 50@10	
Foundry coke	—	—
Coke, hard and soft	10 c.	—

Cleveland, O. June 22, 1875.

Reported by our Special Correspondent.

Per ton of 2000 lb. f. o. b. vessels.

Youghiogheny, lump	$4 40	Columbiana	$3 00
Youghiogheny, nut	3 50	Strip Vein & Steubenville	3 30
Briar Hill, according to quality	$3 05 to 4 00	Mountain Blossburgh (blacksmith)	5 40
Massillon	3 25	American Cannel Coal Co.'s Cannel	4 40
Hocking Valley	3 35		
Straitsville	3 35		

The prices of coal remain firm and market unchanged, with a good supply coming in. The miners' strikes are practically ended, but mining has not been fully resumed and there are so many furnaces out that the full force of the mines is not required. Orders for winter's supplies are beginning to come in.—*Manufacturing and Trade Review.*

Detroit, Mich. June 22, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep. sizes	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	7 50
		Massillon	7 00

Erie, Pa. June 22, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb. Bituminous f. o. b.

Briar Hill lump.....$4 00—Beaver lump..... $4 00

Indianapolis, Ind. June 22, 1875.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers.

Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

Sand Creek, per ton	$3 25	Peytona cannel, per ton	7 25
White River, "	3 00	Indiana Cannel	6 50
Brazil Block, "	2 65	Hocking Valley	4 25
Highland, grate, "	2 60	Youghiogheny	4 75
Block Nut, per car	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack "	17 50	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Grate	$8 50	Chestnut	8 40
Egg	8 50	Stove	8 60

Owing to the Miner's strike there is no Lehigh coal in this market.

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	8
White River	14	" Slack, "	7
Brazil Block	14	Peytona Cannel	28
Highland grate	14	Indiana "	24
Block Nut, domestic use	12	Youghiogheny	20
Highland Nut, " "	12	Blossburg	26
" " steam	8	Piedmont	26

GAS COKE (measured.)

Chushed	15c.	Lump	12c.

ANTHRACITE.

All sizes (Wilkes-Barre and Lackawanna), $10 per ton.

Louisville, Ky. June 22, 1875.

Specially reported by Messrs. BYRNE & SPEED.

The following are our retail prices:

Pittsburgh, per load of 1900 lb	$3 00	Kentucky lump, per load	....
Screened Raymond City	2 75	Kentucky nut, per load	....
Pine Hill	2 75	" Slack, "	....
Buckeye Cannel	5 00	City-made Coke, per bus.	....
Peytona "	5 50	Pittsburgh, whsale, "	....
Nut and Slack	2 25	Kentucky on cars, at wholesale per bushel	....
Pine Hill nut	2 25	Anth., per ton,	$10 to $10 50

Milwaukee, Wis. June 22, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Scranton	$9 50
Lehigh Prepared	10 50	Briar Hill, select	8 00
Lackawanna	9 50	Blossburgh	8 00
Pittston	9 50	Pittsburgh	7 00

New Orleans, La. June 22, 1875.

Our market is without much animation, with a tendency to an advance in prices. We quote:

Pittsburgh coal, retail, per bbl	65c.
" wholesale	40@45c.
" steamboats, per box	50c.
" to manufacturers, per bbl	60c.
" shipments, per hhd	$7 00
Anthracite, wholesale, per ton	none.
" retail, "	$12 50
Virginia Cannel, per bbl	90c.
Scotch " "	$1 00

Pittsburgh, Pa. June 22, 1875.

Per ton of 2000 lb. and Bushel of 76 lb.

Youghiogheny coal, ton,	$2 00	Pittsburgh retail deliv'd. per bushel	9@10c.
" coke, "	2 50	Anth'cite on cars Lehigh	$7 75
Connellsville coal, "	2 50	" Wilkes-Barre	6 75
" coke	$2 25@2 75		
Pittsburgh coal	1 85		

Twenty-five to fifty cents per ton additional for delivery.

The *American Manufacturer* of June 23, says:

"COAL.—The coal trade continues very quiet so far as Pittsburgh is concerned, and no improvement can reasonably be looked for so long as navigation is suspended. Operators in the lower river markets are no doubt well satisfied with the situation, as it will enable them to work off their stock at improved prices, but Pittsburgh merchants who have their capital locked up in black diamonds, here, are very anxious for water, as it is unavailable in its present condition, we might say—dead stock. The stock in first hands has been steadily accumulating for several months, and it is doubtless larger now than at any time this year; it is earnestly desired, therefore, that there will be water before long, so that this coal may be placed where it is needed. Those doing business by rail are busy, having all they can do.

"COKE.—the coke trade continues fairly active, more so than at the corresponding time last year, and the general tone of the market is firm, although the prices have undergone no quotable change recently; Connellsville quoted at $2.75@3 per ton delivered free on cars in Pittsburgh. The consumption is said to be increasing, which is owing to the fact that it is being substituted by many of the pig iron furnacemen in place of coal; it has been demonstrated, we believe, that in addition to making a better quality of iron, the difference in cost, as compared with coal, is very slight. The striking miners in the Connellsville district have resumed work, manufacturers having advanced the rates somewhat, and it is fair to infer that the production is considerably larger than it was, in consequence."

San Francisco.

From the *Commercial Herald* of June 10, 1875.

Imports from January 1st to June 1st:

Anthracite tons	6,159	English, tons	21,909
Australian, tons	37,878	Vancouver Island, tons	25,866
Coos Bay, tons	15,332	Rocky Mountain, tons	22
Cumberland, tons	5,039	Seattle, tons	18,552
Mt. Diablo, tons (4 mos)	65,515	Bellingham Bay, tons	4,240

Australian advices per *City of Melbourne* report large engagements and free shipments to this port from New South Wales. These heavy exports to California have a very depressing effect upon our market, causing prices to ease off not a little. The *Nouveau St. Michel* from Newcastle, N. S. W., brought 654 tons; the *Aliquis* from Liverpool had 729 tons; the *Germania* from Bellingham Bay, 1,430 tons; the *Empire*, 400 tons Coos Bay. These supplies, with others from adjacent mines, keep us well supplied with Bituminous, while the Anthracite supply is very short, and Pittston and Lehigh respectively may be quoted at $20@25, and jobbing at much higher figures. Cumberland is very plentiful and cheap. Last week we had something to say about the Coal fields of the Northern Coast and British Columbia mines. The *Bulletin* has this to say about the mines nearer home: "In Nevada two important discoveries of coal have been made during the last twelve months—the Pancake mines and those in El Dorado Canyon, Lyon County. The latter has been tested for steam purposes at the mines on the Comstock lode, and the proprietors are arranging for the construction of a narrow-gauge railway from the canyon to Virginia City. Coal also exists in several sections of California. In Shasta County, one of the largest beds on this side of the continent has recently been discovered. A few months ago extensive deposits were found in Monterey County. The Lincoln mine in Placer is being developed, and two narrow-gauge railroads are to be constructed to the coal fields of Ione Valley in Amador County. Coal is also reported to have been found in Butte and Colusa Counties, and only awaits means of transportation to bring the same into market." We quote Bellingham Bay at $8 50; Coos Bay, $10; California Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively. Cargoes of Scotch and English Steam to arrive may be quoted at $9; Cumberland, $18@20; Nanaimo, $9 50@10; Seattle, $9 25@10; Sydney, $9@9 25 by the cargo.

Toledo, Ohio. June 22, 1875.

[Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb. on cars.

Hocking Valley	$3 40	Massillon	4 20
Straitsville	3 40	Youghiogheny	5 00
Shawnee	3 40	Blossburg	7 50
" nut	2 90	Cumberland	7 50
Briar Hill	5 50	Connellsville coke	7 00

ANTHRACITE.

Grate, screened	$7 75	Stove, screened	$8 25
Egg, "	7 75	Chestnut "	7 75
Lehigh Lump	9 50		

40 cents to $1 per ton additional for delivery at retail.

Halifax, N. S. June 22, 1875.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 00	Little Glace Bay	3 50
Gowrie	3 50	Blockhouse	3 75
Victoria	3 50	Albion (at Railroad)	4 00

Montreal. June 22, 1875.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Wholesale per ton of 2240 lb.

Scotch Steam	$5 50	Cape Breton Steam	$4 50
Pictou "	5 00	Newcastle Smiths	7 00

Anthracite at retail, per 2000 lb., delivered.

Egg	$7 50	Chestnut	7 00
Stove	7 75		

Toronto, Ont. June 22, 1875.

ANTHRACITE.

	per ton.		per ton.
Broken	$7 05	Chestnut	$7 35
Egg	7 05	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton*	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 57	2 42	2 86	3 18	3 39
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	16	..	56	52	72
‡ Philipsburg, N. J.	98	83	1 34	1 44	1 65
‡ Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 21	2 06	2 80	2 82	3 03
High Bridge, N. J.	2 40	2 20	2 80	2 79	3 09
Somerville and Raritan, N. J.	2 80	2 60	3 20	3 19	3 49
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 95	2 75	3 35	3 34	3 64
¶ Jersey City, N. J., and New York, via Morris Canal	2 85	2 35	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR.	3 30	3 10	3 70	3 69	3 99
§ Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

* Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $11 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

Schuylkill Coals, per ton of 2240 lb.	From Pine Grove.	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.
To *Port Richmond*, for shipment, via P. & R. R. R., Main Line	1 87	1 82	1 75	1 74	1 67
Philadelphia, Retail yards	1 97	1 92	1 85	1 84	1 77
Harrisburg, via Lebanon Valley Branch	1 23	1 80	1 73	1 72	1 65
Allentown, via East Pennsylvania Branch	1 52	1 47	1 40	1 39	1 32
Lancaster, and Points on Lancaster Branch, via R. & C. R.R	1 57	1 52	1 45	1 44	1 37
Dauphin, via Schuylkill and Susquehanna Branch	62	....	1 25	1 24 via Auburn	1 17
Jamestown, via Lebanon and Tremont Branch	86	....	1 69	1 68	1 61
Lebanon, via Lebanon and Tremont Branch	90	....	1 88	1 87	1 80
From *Tamanend* to *Catawissa*, via Catawissa and Williamsport Branch Railroad					94
From *Tamanend* to *Williamsport*, via Catawissa and Williamsport Branch Railroad					1 39
*From *Port Clinton* to *Philadelphia* via Schuylkill Canal including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of unloading)					1 59
*From *Port Clinton* to *New York*, within towing limits, "53d street					2 56

For shipment via Main Read or Schuylkill Canal, one and one-half cents per ton per mile, and two cents per ton additional, to Port Carbon, Mount Carbon, Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

Coal sent to points on the Catawissa and Williamsport Branch will be charged one and one-half cents per ton per mile, and two cents per ton additional to Tamanend.

*The charge from Schuylkill Haven to Philadelphia is 11c. additional to these rates.

On and after June 1, until further notice, a drawback of ten cents per ton will be paid on shipments of Anthracite Coal from Schuylkill Haven and Port Clinton that have passed Fairmount Locks to Philadelphia and vicinity.

The rates of freight and tolls on lump, steamboat and broken coal will be ten per cent. less than the above rates.

Erie Canal.

	per 2240 lb.
Hoboken to Buffalo	750.
" Rochester	700.
" Oswego	650.

The above rates are exclusive of harbor towing, trimming, unloading and tolls.

Delaware and Raritan Canal.

Tolls and Steam Towage.

Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to New York, towing limits within 53d st. 59c.
" Port Richmond " " " " " 53c.
" " " Semi-bituminous coal, 63c.
" Philadelphia " Cumberland " 58c.
" Trenton " Anthracite " 37c.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:

For Anthracite Coal.....25c.
Bituminous and Semi-bituminous Coal...35c.

Freights.

Per ton of 2240 lb.

PORTS.	From Baltimore and Georgetown.	†From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	1 50
Albany	....	....
Amesbury, Mass	....	....
Bangor, Me	....	1 30
Bath, Me	1 80	1 40
Baltimore	....	....
Boston, Mass	1 75	1 90
Bridgeport, Ct	1 50	1 80
Bristol, Ct	....	....
Derby	....	1 05
Dighton	1 60	....
East Cambridge	....	....
Fall River	1 50	1 90
Hackensack	....	....
Hartford	....	1 25
Hoboken	1 30	....
Hudson	1 60	....
Jersey City	1 30	40
Middletown	....	1 10
Mystic	....	....
Newark	....	95
New Bedford	1 50	....
Newburyport	1 75	....
New Haven	1 50	1 80
New London	1 50	....
Newport	1 50	....
*New York	1 40	....
Norfolk, Va	75	....
Norwalk	....	80
Norwich	1 65	1 00
Pawtucket	....	1 00
Philadelphia	1 00	90
Portland	1 75	....
Portsmouth, N. H	1 85	1 40
Providence	1 50	1 00
Petersburg, Va	1 00	....
Richmond, Va	90	....
Rockport	....	....
Saco	....	....
Sag Harbor	....	1 00
Salem	1 75	1 25
Savannah, Ga	1 50	....
Stamford	....	....
Stonington	....	....
Taunton	....	....
Trenton, N. J	....	....
Troy	....	....
Warren, R. I	....	90
Washington	....	....
Waaeham	1 75	....
Weymouth	1 85	....
Wilmington, Del	85	....

* The rate by barge to this point is $1 55.

† These are the rates prevailing June 24, the market is still very irregular, so that quotations for any length of time are unreliable.

Freights on Bituminous Coals from the Mines to Tide-Water Shipping Ports.

From the Mines to Cumberland and State Line (say an average of 20 miles) the charge is 3 cents per ton of 2240 lb. per mile.

From State Line to Amboy (346 miles) $3 75 per ton of 2000 lb. On coal shipped beyond this point there is a drawback of 50 cents per net ton.

From Cumberland to Baltimore (178 miles) $2 31 per ton of 2240 lb., or $2 02 per net ton, and 4 cents per gross ton for use of cars.

From Cumberland to Georgetown, (152 miles) by canal, $1 25. Tolls, 51 cents.

From the Mines to Piedmont, (from 4 to 10 miles) 5 cents per ton of 2240 lb per mile on distances less than 5 miles, and 4 cents per ton per mile on distances not over 10 miles.

From Piedmont to Baltimore, (206 miles) $2 69 per ton of 2240 lb., or $2 40 per net ton.

From any point in the Kanawha Valley to the James River wharves below Richmond, (say 350 miles) by C. and O. R. R., including terminal charges, per ton of 2240 lb or Cannel coal, $4 50.

Do., do., for Semi-Cannel or Splint, per ton of 2240 lb., subject to rebate on shipments of 5000 tons or more, $3 65.

From Irwin to W. Phila (say 332 miles) per P. R. R Penn. Westmoreland gas coal, per ton of 2000 lb.....$4 75

From Osceola to W. Phila. (say 248 miles) per T. & C. R. R., per ton bituminous coal of 2000 lb..... 3 30

From Fairmount and Clarksburg to Baltimore (say 300 miles) via B. & O. R. R., including loading, per 2000 lb..... 4 75
On through coal after deducting drawback..... ....

From Richmond, Va., to New York, via vessel, 392 miles per 2240 lb.. 1 60
" " " *Boston,* about 650 " " " 2 00
" " " *Philadelphia,* 292 " " " 1 25

From the Mines to Richmond, via James River and Kanawha Canal, 15 miles..... 15

THE BRITISH COAL AND IRON TRADES.

June 11, 1875.

North of England.—The coal and iron trades of this district are quiet. There is less doing in both than usual at this season of the year. Coke is also quiet, and is inclined to be weak in price, at 14/@16/ at the ovens. The Cleveland Ironmasters' Association's returns for May show, that there were 131 furnaces in blast, out of 156 built; that the make of pig iron was 78 tons less than in April; that the shipments of pig iron from Middlesbrough show an increase over May, 1874, of 6,610 tons to foreign points, and 4,728 tons coastwise; that stocks, May 31, were 101,491 tons, or an increase of 22,470 tons over April 30. Consumers are only buying for immediate wants. The continued failures in mercantile circles are having a very depressing effect, and it is impossible to state how soon confidence will be restored. No. 1 pig iron is quoted at 61/: No. 3, 54/; No. 4, forge, 52/ 6d.@53/. The manufacturing iron trade is very quiet. Rail makers are more firm in their prices, as they find that the rates that ruled a short time since, only incurred losses. The quotations are—£7 2/ 6d.@ £7 7/ 6d.

Yorkshire and Derbyshire. The coal trade is very quiet, and many of the collieries are on short time. Prices are now as low as in 1871, while the cost of mining is much greater. It is anticipated that a reduction of wages will have to take place. The iron trade continues quiet, although a fair quantity of iron rails are being turned out. The failure of GILEAD A. SMITH & Co., who owed the Phœnix Iron Co. £14,000, was the final blow that compelled the company to go into liquidation, although it was expected, previous to this, that the capital would be increased and the business continued. It is stated that recent failures will probably affect several firms in this district. The business in Bessemer steel is very active, particularly for rails.

South Staffordshire.—The coal trade is quiet with a weakening tendency to prices. Best coal is generally firm at list prices, but some individual firms are taking orders at a reduction of 1/ per ton. The iron trade continues quiet without much change. Common cinder-pig is selling at £3@£3 5/ per ton, and best native all-mine (hot-air) at £3 17/ 6d., common unmarked bars are offering at £8 7/ 6d.

Monmouthshire and South Wales.—There is but very little improvement noticeable in either the iron or coal trades of this district. The collieries, rolling mills and furnaces are being started as fast as possible, but under the existing depression of business it is difficult to find employment for the men—the applications for employment being greatly in excess of the requirements. The prices of coal have already declined considerably.

Scotland.—Prices in the warrant market have again declined since last week by about 2/ per ton, and the trade has, on the whole been very inactive. On Tuesday, business being flat, prices fell to 57/ 9d. A corresponding reduction has been made in the prices of the principal makers' brands, which are as follows:—G. m. b. at Glasgow, No. 1, 60/; No. 3, 58/ 6d.; Gartsherrie, 65/ 6d. and 61/; Coltness, 67/ and 63/; Summerlee, 65/ and 62/; Langloan, 64/ and 62/; Carnbroe, 61/ and 60/; Monkland, 60/ and 59/; Clyde, 60/ and 59/; Govan, at Broomielaw, 60/ and 59/; Calder, at Port Dundas, 65/ and 63/; Glengarnock, at Ardrossan, 68/ and 61; Eglinton, 61/ and 59/; Dalmellington, 61/ and 59/; Carron, a Grangemouth, 70/; Shotts, at Leith, 66/ and 63/; Kinneil, at Bo'ness, 62/ and 59/. The malleable trade is not quite so promising as it was a few weeks ago, when works which had long been idle were started. The very unsettled state of the iron market has naturally produced this result, and it is not likely that the manufactured iron trade will experience much improvement until pigs become less liable to fluctuation. Meantime a very considerable reduction has taken place in the value of the kinds of iron most in request. Bars and nail rods have each fallen 10/ per ton. The coal trade remains dull, both the home and the foreign demand being limited. Within a few weeks, the number of colliers employed has greatly decreased, on account of many of the younger men leaving for other and more remunerative employment; yet no appreciable relief has resulted in the heavy supplies of coal which are thrown into the market. Probably, in a short time, the influence of this thinning of the ranks of the miners will make itself felt. Some speculation has taken place on foreign account in consequence of holders of large stocks of coals pressing sales below the current rates. In Glasgow, just now, household coals are selling at from 8/6d. to 10/6d. per ton; Wishaw Main, 7/6d. to 8/6d.; Splint, 8/3d. to 9/; smithy, 14/3d to 14/6d., steam, 8/3d. to 11/.

Import Duties.

The following are the duties in Gold:

Flat Iron, not less than 1, nor more than 6 inches wide, nor less than ¾, nor more than 2 inches thick. *Round Iron,* not less than ¾, nor more than 2 inches in diameter, and *Square Iron,* not less than ½, nor more than 2 inches square per pound 1 c.

Flat, Round or Square Iron, of larger or smaller sizes than the above mentioned, per lb .....1½c.

Provided, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron in bars.

Provided; that none of the above iron shall pay less than 35 per cent.

Railroad Bars—Iron.....70c. per 100 lb.
Railroad Bars—Steel.....$1.25 per 100 lb.
Boiler plates, or other plate iron not less than 3-16 of an inch thick, per lb..... 1¼c.
Scrap Castings per ton..... $6 00
" *wrought* " " 8 00
Pig Iron per ton..... 7 00
Iron ore 20 per cent. *ad valorem*
Antimony, crude or regulus, 10 per cent.
Copper Ore—On all fine contained therein, 3c. per lb.
Old Copper, fit for manufacture only, 4c. per lb.
Copper, pigs, bars, ingots or plates, 5c. per lb.
" sheets, bolts, nails, spikes, rods, pipes, &c., 45 per cent
Tin, in bars, blocks or pigs, and grain tin, free.
Tin Plates, or sheet, and terne or taggers tin, 1 1-10c. per lb.
Lead—Bars or pigs, 2c. per lb. Old lead, for manufacture only, 1¼c. per lb. Pipes, shot and sheets, 2¾c. per lb.
Zinc, in blocks or pigs, 1½c. per lb.; in sheets, 2¼c. per lb.; manufactures of, 35 per cent.
Quicksilver, free.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, June 25, 1875.

American Pig.—We have no important transactions to report, although there is constantly some business doing, but mostly in a very small way. Some claim to see an improvement in the demand, and think that we have passed the worst, but we fail to see it Again, others say that business is worse than at any time this year, and that iron can be bought lower. We quote No. 1 foundry at $26@28; No. 2, $24@26; and forge, $22@25. Furnace coal has at last reached a figure as low as the one prevailing last year, and that there are hopes of still further concessions. We hope this may prove true, as the furnace companies deserve some assistance from the coal companies.

Scotch Pig.—We note sales of 300 tons of Coltness at $30, and 200 tons of Glengarnock on private terms, but said to be at a fair figure. The latest cable information from Glasgow indicates a rising tendency in that market. This, in connection with the advanced freights and small stocks, is causing some importers to hold at firmer prices. If the arrivals continue as light as they have been during the past week, under an improved demand, this firmness may be maintained, but probably not otherwise. We quote Eglinton at $30; Glengarnock, $31 50 @$32; and of Coltness $31@$32.

Rails.—We note a sale of 500 tons for Southern delivery, on private terms, and quote, as heretofore, at $48 @$50 for iron rails at mills, and $70@$75 for steel.

Old Rails.—We are unable to learn of any transactions in this market during the past week. We quote at $26 50@$27.

Scrap Iron.—This market is quiet and depressed. We note sales aggregating about 700 tons on private terms, and quote at $30@$32 from yard.

Boston. June 19, 1875.

Pig has had a very quiet week, neither buyers nor sellers canvassing this market. One or two New York lots have been landed on wharf and at depot here, for prominent foundries, of good brand, No. 1 X American at $28 50, 30 days. The market for foreign is considerably unsettled by the reports and offers from New York, and holders there are quite at sea where to name a price which would tempt sales. The cable advices from Glasgow report that point as rather weak, which further adds to the distrust here expressed. This market quotes nominally $2 a ton above New York, at which point the nominal range is Eglington, $29@30; Coltness, $31; Glengarnock and Gartsherric $31@33. The market here for American quotes, on wharf, No. 1 $29@31; No. 2 $22@27, and gray forge $21@24

Bar jobs along in a trivial way at $60@63, with buyers occasionally able to pick up lots at $58. There is a little better tone vis à vis than was current a week ago. The publicity of the demoralization towards which some were drifting the market, tended as a check. The receipts for the past two weeks have been quite small, and stocks are rather light, with sizes and assortments somewhat broken. Common iron is very listless at $54@56.

Steel is having a slightly improved inquiry for machinery and small tool, with prices steadily maintained. We quote American tool 15@15½c; American Machinery 9½ @10c; do. cash tires 8½@12½c; Sweet's Excelsior Tire, 7@7½c; English Tool, 16@17c

Copper, although very dull, is firmer through the slight speculative inquiry which began to develop towards the close of the week. We quote 22½@23c for spot; New Sheating 30c; Bolts and Braziers 31c; Yellow Metal Bolts 28@29c.

Lead is quiet and steady We quote Domestic 6c; Foreign 6½c; Antimony is in better demand from New York and is fully ¼c higher. We quote at 12½@12½c gold per pound; Sheet and Pipe Lead 9½c c'y; Tin-Lined Pipe 16½c; Bar Lead 9½c, less usual trade or 10 per cent discount.

Spelter is having a small, steady business, with prices well maintained by the Combination. We quote at $7.25 currency 30 days, or $7.15 currency prompt cash. Silesian is quiet, quoting nominally $7.30 gold.

Tin is easy, business being exceedingly slack, Plates are quiet. We quote Straits 20; Banca 24½; Refined English 19½c gold. Plates are active; we quote Charcoal I. C, $9 50@10; Coke $7.75@8; and Terne at $8.50 @11 gold.—*The Commercial Bulletin.*

Cincinnati. June 22, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

CHARCOAL.

Hanging Rock,	No. 1 Foundry	$28 00@29 00	—4 mos
"	No 2, "	26 00@27 00	—4 mos
"	Mill	25 00@26 00	—4 mos
Tennessee No. 1,	Poundry	27 00@28 00	—4 mos
Tennessee, No. 2,	"	25 00@26 00	—4 mos
"	Mill	25 00@25 00	—4 mos
Missouri, No. 1,	Foundry	.... @	—4 mos

STONE COAL.

Ohio, No. 1, Foundry	25 00@26 00	—4 mos
" No. 2, "	24 00@25 00	—4 mos
Ohio Mill	24 00@25 00	—4 mos
Missiouri, No. 1 Foundry	28 00@29 00	—4 mos
" No. 2, "	27 00@28 00	—4 mos
" Mill	26 00@27 00	—4 mos

CAR-WHEELS.

Hanging Rock, C. B	40 00@50 00	—4 mos
Tennessee "	35 00@40 00	—1 mos
Missouri "	35 00@40 00	—4 mos
Alabama "	35 00@40 00	—1 mos

BLOOMS.

Charcoal	70 00@ 80 00	—cash

SCRAP IRON.

Cast	7cc.@ 90	—cash
Wrought	1 00@1 40	—cash

Chicago. June 22, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron. Quotations are as follows:

No. 1 Coltness	$46 00@	
No. 1 Gartsherrie	45 00@	
No. 1 Summerlee	44 00@	
No. 1 Glengarnock	42 00@	
No. 1 Eglinton	40 00@ ...	
Wareer's "American Scotch"	38 00@	
Massilon No. 1 Foundry	35 00@	
No. 1 Grand Tower Mo. ores (Bituminous)	31 00@	
No. 2, " " "	29 00@	
No. 1 Mill	27 00@	
Union "A" 1 (Anthracite)	28 00@	
Union "B" 1 (Anthracite)	27 00@	
No. 1 Lake Superior (charcoal)	32 00@	
No. 2 Lake Superior "	30 00@	
No. 3 Lake Superior "	33 00@	
No. 4 Lake Superior "	35 00@	
Bessemer Steel Rails	76 00@	
New Iron Rails	52 00@	
Old Rails	28 00@	

There are no signs of improvement in the iron market and no change in prices. The demand is small and only for immediate use. Buyers are exercising a considerable spirit of caution which will finally lead to a healthy state of the market, and crush out the purely speculative spirit.—*Railway Review.*

Cleveland, Ohio, June 22, 1875.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore:

FOUNDRY IRON.

No. 1, Lake Superior Charcoal	32 50@....	
No. 2, " "	31 50@....	
No. 1. Anthracite	30 00@....	
No 2, "	26 00@....	
No. 1, Bituminous foundry	29 50@ ...	
No. 2, " "	27 50@....	
American Scotch, No. 1, Cherry Valley	32 00@....	
" " B—1, " "	27 50@....	
" " No. 2, " "	27 00@....	
No. 1, Massilon	31 00@....	
B—1, "	29 00@....	
No. 2, "	27 00@....	

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal	32 00@....	
No. 4 " " "	33 00@....	
Nos. 5 and 6 " "	34 00@....	

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal	32 00@....	

FORGE IRON.

No. 1, Gray	26 50@....	
White and Mottled	24 00@ ...	

PIG IRON.—There is no noticeable change in the pig iron market, the demand being slow and quiet, embracing nothing beyond the most urgent necessity; and there is no prospect of a stiffening in price or increased demand.

Bar remains firm and in fair request at our quoted rates. Rather more is doing in galvanized sheet and boiler plate, angles and bridge irons.—*Manufacturing and Trade Review.*

Indianapolis, Ind. June 22, 1875.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Trade very dull at prices named below.

New Rails at mill	$56 00@58 00	
Old Rails "	28 00@30 00	
Hanging Rock Charcoal Pig No. 1 foundry	29 00@32 00	—4 mos
" " " " " 2 "	27 00@30 00	—4 mos
" " " " Mill	25 00@28 00	—4 mos
Car Wheel C. B	45 00@50 00	—4 mos

STONE COAL.

Indiana No. 1 Foundry pig Red Short	30 00@33 00	—4 mos
" 2 " "	28 00@30 00	—4 mos
" 1 Forge " "	....@	—4 mos
" 2 " "	....@	—4 mos
Ohio No. 1 Foundry pig Cold Short	28 00@30 00	—4 mos
" 2 "	26 00@23 00	—4 mos
" Mill	25 00@28 00	—4 mos
" No. 1 Foundry, Neutral	30 00@34 00	—4 mos
" No. 2 " "	28 00@30 00	—4 mos
Merchant Bar	2.35c.	—3 mos
1st quality C. H. No. 1 Boiler Plates, per lb	5½c.	—3 mos
1st " Com. sheet for No. 24, W.G. "	4 c.	—3 mos
1st " Charcoal Sheet " " "	6 c.	—3 mos
Best Bloom Galvanized Sheet, discount 20 per cent		—cash.
2d quality " " " 30 "		—cash.

f. o. b. in Indianapolis.

Louisville. June 22, 1875.

Specially reported by Messrs. GEORGE H. HULL & CO.

There is more demand for both Cold and Hot Blast, but at reduced figures. We revise quotations as below in accordance with recent sales. The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock Ores	$27 00@28 00	
No. 2 " " "	25 00@26 00	
No. 1, Mill, from " "	23 00@24 00	
No. 1. foundry, from Alabama, Georgia and Tennessee ores	25 00@26 00	
No. 2, foundry, from Ala., Geoa'a and Tenn. ores	24 00@25 00	
No. 1, Mill, from " " "	23 00@24 00	

HOT BLAST—STONE COAL AND COKE.

No. 1, foundry, from Hanging Rock ores	25 00@26 00	
No. 2, " " "	24 00@25 00	
No. 1, Mill, " " "	23 00@24 00	
No. 1, foundry, from Ala., Geo'a and Tenn. ores	25 00@26 00	
No. 2, " " "	24 00@25 00	
No. 1, Mill, " " "	23 00@24 00	
No. 1 foundry, from Missouri ores	27 00@28 00	
No. 2 foundry, from Missouri ores	26 00@27 00	
No. 1 Mill, from Missouri ores	26 00@27 00	

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores	35 00@40 00	
" " Tennessee "	30 00@33 00	
" " Alabama and Georgia ores	30 00@35 00	
" " Kentucky ores	28 00@35 00	

Milwaukee. June 22, 1875.

The following are the present prices, per ton of 2,240 lb.:—

Frankfort L. S. Charcoal, No 1	$30 00	
" " " No. 2 & 3	28 00	
" " " No. 4 & 5	31 00	
" " " No. 6	35 00	
Mil. Anthracite L. S., No. 1	30 00	
" " " No. 2	28 00	
Wisconsin Iron, No. 1	26 00	
Mahoning Valley Bit's No. 1	32 00	
" " " No. 2	30 00	

Pittsburgh. June 22, 1875.

Specially reported by A. H. CHILDS, Esq., Commission Merchant for the sale of pig iron, blooms, ore, etc.

The metal market remains very quiet but without any perceptible weakening in prices. Some brands are still being held for higher prices, but consumers experience no difficulty in obtaining all they require of equally good Forge Iron at $24—4 mos.

No 1. foundry	$27 00@28 00	—4 mos
" 2, "	25 00@26 00	—4 mos
Gray Forge	24 00@	—4 mos
White and mottled	21 00@22 50	—4 mos

The *Pittsburgh Commercial* of June 19, says:

"The course of the pig iron market during the past week presents no unusual features, as values have remained steady at about the prices reported in our last. Two sales of extra gray forge, aggregating 600 tons, have been reported at $25 00, four months, but the selling price for No. 1 is unchanged at $24 00. Transactions are wholly based on the demand for immediate use. Mill owners would probably be willing to purchase for future delivery at present prices, but furnace owners claim, with some force, that present prices are too low for them to make such contracts; while, on the other hand, the price of manufactured iron does not allow manufacturers to pay in advance on future contracts for metal. The demand for pig metal will probably remain steady for some time; but no appreciation in values is probable until a similar improvement takes place in the market for finished irons.

"Muck bar, blooms and scrap iron have been less prominent features in the iron market since the termination of the puddlers' strike. Still there is a steady demand, which rapidly absorbs a considerable portion of the receipts. Many of the mills continue to run on this class of supplies, alleging that it is cheaper than to puddle their own iron. We note sales of muck at $42 50; No. 1 Juniata blooms at $75 00; scrap continues quotable at $28 00@30 00 for ordinary wrought.

"The sales for the week have been liberal, aggregating 3,060 tons. They are as follows:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

700 tons gray forge	$24 00	—1 mos.
400 tons gray forge extra	25 00	—4 mos.
250 tons gray forge	24 00	—1 mos.
250 tons gray forge	24 00	—4 mos.
200 tons gray forge extra	25 00	—1 mos.
200 tons gray forge	24 00	—4 mos.
200 tons gray forge	24 00	—1 mos.
200 tons gray forge	24 00	—4 mos.
200 tons gray forge	24 00	—4 mos.
100 tons gray forge	24 00	—4 mos.
100 tons gray forge	24 00	—1 mos.

CHARCOAL.

100 tons Tennessee, C. B.	$32 50	—cash.
100 tons No. 1 foundry, H. R	30 00	—4 mos.
40 tons No. 1 foundry, H. R	30@32	—4 mos.
20 tons No. 1 foundry, H. R	30 00	—cash.

ALLEGHANY COKE.

50 tons Red Bank	$25 00	—4 mos.

CONNELLSVILLE COKE.

10 tons No. 1 foundry	$26 50	—4 mos.

ANTHRACITE.

20 tons No. 1 foundry	$28 00	—4 mos.

BLOOMS.

20 tons No. 1 Juniata	$75 00	—cash.

MUCK BAR.

200 tons neutral	$42 50	—4 mos.

"No remark was more common during the strike, than 'Pittsburgh is losing her trade, and never will get it back again.' Events prove this prophesy false. There never was more iron being made in Pittsburgh than today. At present there are but two mills, the Superior Rail Mill and WHARTON Bros., idle. Even the old Eagle, that has been cold for months, is running. Pittsburgh still retains her prestige."

The *American Manufacturer* of June 23 says:

"Trade continues fairly active, more so, if anything, than usual at this season of the year, but the market is unsettled and in an unsatisfactory condition. Producers claim that current rates do not cover actual cost of manufacture, taking the reduced cost of ore, labor, and everything into consideration, while consumers (the mills) allege that the raw article is now higher, relatively, than the product; hence, while the former, as a general thing, are for an advance, the latter cannot see their way to pay it. Thus the matter stands at the present writing, and while the indications generally favor the producer, it is difficult at this writing to foretell how it will terminate. The fact that the production here and at points tributary to this market is light, scarcely equal to the consumption, and that stocks are gradually being reduced, makes producers confident in regard to the immediate future of the market; they intimate that if the raw article is higher than the product, the latter must be advanced, although, as the saying is, this is a good deal easier said than done. As intimated in our last review, there would be no difficulty in placing considerable quantities for future delivery at current rates, as nearly all the mills would buy more or less, but thus far there have been no sellers. It is reported that several large sales have been made in the Shenango and Mahoning Valleys, recently, at equal to the advance demanded and delivered here, and these reports, as might be expected, have not been without their effect in stimulating the market. We understand the Cambria Iron Company took one lot of 5,000 tons of Bessemer iron, and the best evidence of this sale is the arrival here of from 30 to 40 cars *via* the Cincinnati and Pittsburgh Railroad, consigned to that Company. There is not much doing in foundry irons, the demand is mostly for small lots, and prices remain unchanged.

"MANUFACTURED IRON.—The general position of the market remains substantially as at the date of our last report; while business continues fairly active, it is very generally reported unsatisfactory. The complaint is not so much in regard to orders, as we understand there is no difficulty in effecting sales either for present or future delivery, especially the latter, at current rates, as it is in regard to prices, which, it is claimed, afford no margin for profit. Hence our manufacturers generally are refusing to contract for future delivery at current rates, particularly since it is evident that furnace men are making a determined effort to enhance the cost of raw irons. There is another complaint being made by our manufacturers, and that is in regard to transportation by rail; they allege that they are unable to compete with other points, in some sections of the country, in consequence of the railroads centering here refusing to give them rates as low as can be obtained from competing points. This is said to be a very serious drawback, and it is certainly worthy of the immediate attention of our railroad managers, as it is a matter in which the railroads are very much interested. All our manufacturers ask is a chance to compete with other manufacturing points, and to this they are certainly entitled; the iron trade is a very important one to the railroads, and they should, it strikes us, do all in their power to foster and encourage it. Quotations may be given upon a basis of $2 20@2 25 Western, and $2 35@2 40 Eastern classification, for merchant bars."

San Francisco.

From the *Commercial Herald* of June 10, 1875.

The ship *Juno*, from Liverpool, brought 429 tons Pig Iron, 200 ingots and 300 slabs Tin. The *City of Melbourne*, from Sydney, had 100 ingots Australian Tin. The market for Pig Iron, and in fact all other kinds of Iron and Metals, seem to be sluggish, and prices more or less nominal. Certainly rates favor the buyer for Tin Plate and other imports. We quote Pig Iron at $40 and upward, according to brand. We note a shipment of 1,000 pigs Selby's Lead for Hongkong, per *Weymouth*.

St. Louis, Mo. June 22, 1875.

Unbroken quietness reigns in the iron market; no advance or decline in anything requires note. Stocks of domestic pig iron are gradually diminishing. Shipments of pig iron from the Iron Mountain are still considerable. All the furnaces running in the State (with one exception), are running to fill orders.

Merchant Iron.—Assorted bar, hoop and light band are stationary at $2 60; charcoal blooms, $75@85; scrap blooms, $70@75; sheet No. 22 to 27, 4½@4¼c.; No. 1 wrought scrap, 1¼c; cast scrap ¾c.

Lead.—In request, at the advance of last week—6½c. Stock in market not large.

Furnace and Mill Notes.—There are fewer furnaces running in Missouri at this time than at any period during the past five years. The furnaces running are the Midland, Pilot Knob, South St. Louis, Missouri, Scotia and Moselle. The causes of recent stoppages have been repairs and want of charcoal. The Laciede mill is doing a better single-turn business than ever before. The Helmbacher is far from being crowded. The Harrison and St. Louis Iron and Bolt Companies are pushing ahead, while the McDonald and Tudor Iron Works are moving as business justifies.—*Mines, Metals and Arts.*

METALS.

NEW YORK, Friday Evening, June 25, 1875.

Gold Coin.—During the week past gold has ranged from 117¼ to 117¼, and closed to-day at 117¼.

Bullion.—Fine silver bar is quoted at $1 21@1 22, gold, per ounce, and fine gold bar, at ¼ to ¼ per cent. premium.

Copper.—The demand continues quite light, although there is but little offering. Manufacturers are buying very sparingly, and are not expected in the market until the middle of next month, if even then. The sales, during the week under review, will aggregate about 200,000 lb. at 23c., and a forced sale of 50,000 lb. at 22½c. The London market is quoted at £83 for Chili Bars.

MESSRS. JAMES & SHAKSPEARE, of London, under date of June 11, say:—'Bars have been quiet throughout the week, and values show a decline of about 10/ per ton, although it would be difficult to find sellers, except of moderate parcels, unless at full list rates. We note sales of Burra Cake at £87 and £87 10/, and the demand at the lower figure was rather heavy, enabling importers to dispose of the bulk of the late arrivals. Nearly all the outside brands have also been cleared off the market, the values being such as to tempt consumers to pur-

chase. English is in a very anomalous position. Makers will only sell in moderate quantities, and at full prices, whilst a few second hand lots are still to be had on moderate terms."

Tin.—There is no business doing in pig tin, which is quoted at 18¾c @19c. for Straits, Refined and Common, and 23¾c.@24c. for Banca. The demand for tin plates in a jobbing way has been fairly brisk. We quote charcoal tins at $8.25@8.37½; ternes, $7 50@7.62½; Coke tins, $6.87½@$7; and ternes, $6.75, all gold.

MESSRS. JAMES & SHAKSPEARE, of London, under date of June 11, say:—"English continues firm, and purchases cannot be effected, except at full rates. The improvement which took place in foreign sorts at the close of last week was well maintained until 8th instant, by which date values showed an advance of about 2/ per cwt. upon those ruling on the Friday previous; but a decline set in upon Tuesday last, and we closed yesterday at prices almost identical with those ruling when our last circular was issued."

Lead.—The leading movement in the metal market this week has been in lead. About 3,500 tons have been purchased, including all the Selby in store, and to arrive during July, August and September; some Western and Newark lead. The greater portion of this quantity was purchased on the basis of 5¾c., although some of it brought as much as 5.87½c. gold. This quantity was purchased wholly for consumption, the buyers having fears that from sundry causes the supplies would not be so great during the balance of this year. The stock in this market now is about 1500 tons in private hands and from 1500 to 2000 tons held by the Government. The latter is firm at 6¼c. gold, and the former at 6c.@6¼c The St. Louis market is strong at 6¼c. currency with freights to this market at 45c. Foreign is quiet at 6¾c. gold.

Spelter and Zinc.—There is but little doing in either spelter or sheet zinc. The former is still held at 7·15c@7¼c currency, for Domestic, and the latter at 8¼c @8¼c gold.

Antimony.—This article is quiet at 13c@13¼c gold.

Quicksilver.—This market is quoted at 80c, and San Francisco 65c@70c per lb. Our latest London advices are by mail, and quote at £11 15/@£12 per flask, in store.

The San Francisco *Commercial Herald*, of June 10, says: "There are large buyers here for future delivery, at 65c., the impression being in some quarters that we have touched bottom. This may be so, but we do not believe it. The time is near at hand when the production will be largely increased. The exports by sea for the past week, by two schooners and a steamer for Mexican ports, and a steamer for Victoria, are as follow:

	Flasks.	*Value.*
Alacran Mining Company	75	$3,697
Thomas Bell	200	9,945
Rodgers, Meyer & Co	10	497
I. Gutte	10	497
Falkner, Bell & Co	2	99
Totals	297	$14.735"

FINANCIAL.

New York Stocks.

June 25, 1875.

The New York Stock market has gradually manifested an improvement during the operations of the week over the unsteady feeling noted in our last, and closed firm yesterday at a general advance.

The feature of the week has been the activity in the Mariposa Land and Mining Co. shares, the dealings in this stock having amounted to nearly 9,000 shares at a decided advance.

The Central Railroad of New Jersey has declared its usual quarterly dividend of 2½ per cent., payable July 20th.

At an auction sale on the 23d inst., $5,960 Metropolitan Gas Light scrip sold at 105, and $3,500 Peach Mountain Coal Co. 1st mortgage 7 per cent. gold bonds at 5½.

We note Erie stock still quoted at 14½, though intrinsically it is generally thought to be entirely valueless, for the road, sold under the mortgages, would not bring anything like their face value.

Quotations and sales of stocks:

	Highest.	Lowest.	Closing.	Sales.
Pennsylvania Coal Co.	—	—	270	—
Consolidation Coal Co.	46	45	45	150
Spring Mt. Coal Co.	—	—	63	—
American Coal Co	—	—	45	—
Maryland Coal Co.	—	—	19	—
Cumberland Coal and Iron Co.	—	—	—	—
Del., Lack. & West. R.R. Co.	120	118¼	120	2840
New Jersey Central R. R. Co	111	108½	111	417
Delaware and Hudson Canal Co.	120½	119⅞	120½	308
Quicksilver Mining Co. prefrd.	—	—	21½	300
" " " Common.	16¼	15⅝	16	800
Mariposa Land & Min. Co. various	9⅜	7⅛	9⅜	8970
St. Louis & Iron Mountain R. R.	—	—	19	50
Lehigh & Wilkes-Barre Coal Co.	—	—	—	—
Manhattan Gas Co.			—	—
New York Gas Co.			—	—
Total Sales.				13835
Sales for the week previous.				6684
Increase.				7151

The following are the sales of bonds for the same period:

	Amount.		Price.	
Del., Lack. & W. RR. convertible.	....	at from	..	to....
N. J. Central RR. 1st consolidated mortgage bonds	16,000	"	106½	" 107⅛
St. Louis & Iron Mount'n 1st Mtg bonds,	2,000	"	89¾	".....
St. Louis & Iron Mountain, 2d Mtg. bonds	....	"	..	".....
N.J. Central Con. Convt.	....	"	..	".....
" " 1st Mtg. N.	....	"	..	".....
Del. & Hudson Canal, 1st Mtg. Reg. bonds, 1891	19,000	"	110	".....
Del. & Hudson Canal, 7s, 1884,	....	"	..	".....
Del. Lack. & W. R. R., 2d Mtg.	....	"	..	".....
C. & O. R.R. 1st Mtg. Coupon on	....	"	..	".....
Total Sales.	$37.000			

Philadelphia Stocks.

PHILADELPHIA, June 25, 1875.

The dealings in the Philadelphia Stock Market exhibit a decrease as compared with those reported in our last. Prices, however, have gradually manifested an improvement during the operations of the week, closing yesterday at a decided advance.

The transactions in bonds exhibit quite an increase, as compared with those for the week previous, closing firm, with quotations nominally unchanged.

At auction recently, $3 000 L. V. R. R. 6's Coup. sold at 102½; $3,000 Coal Ridge Improvement and Coal Co. 6's at 71, and 14,000 Susquehanna Canal Co. 6's Coup. at from 79 to 79¼.

Quotations and sales of stocks:

	Highest.	Lowest.	Closing.	Sales.
Reading R. R. Co.	55¼	53¾	55¼	9302
Lehigh Valley R. R. Co.	61⅞	60¾	61¼	1067
Little Schuylkill R. R.	—	—	51¾	20
Catawissa R.R.	—	—	19	—
" " Preferred.	—	—	42	8
" " New Preferred.	—	—	38⅛	—
Huntingdon and B. T. R.R.	—	—	7	100
" " " " P. ef'd.	—	—	14½	86
Minehill R.R.	—	—	54½	89
Lehigh Coal and Nav. Canal.	50⅛	50	50	9359
Morris Canal	—	—	51	—
" Preferred	—	—	130	—
Pennsylvania Canal	—	—	—	—
Schuylkill Navigation Canal.	—	—	7⅛	—
" " Preferred.	15⅛	15	15	518
Delaware Division Canal	—	—	—	—
Susquehanna Canal	—	—	8	200
Westmoreland Coal Co.	—	—	80	—
Buck Mountain Coal Co.	—	—	—	—
Cambria Iron Co.	—	—	17	—
Locust Mountain Coal Co.	—	—	—	—
Emaus Iron Co.	—	—	—	—
Crane Iron Co.	—	—	—	—
Total sales				20,679
Sales for the week previous				25 581
Decrease				4,902

Sales of the various bonds for the period under review have been as follows:

	Amount.		Price.	
Reading RR. 6s, 44,80	....	at	—	10 ....
Catawissa R's., new 7s	....	"	—	" ....
H. and B. T. RR., 2d mortgage, 7s	....	"	—	" ....
Lehigh convt. gold loan	9,000	"	106	" ....
Pa. and N. Y. Canal. 7s	2,000	"	106½	" ....
Schuyl. Nav. 6s, '72	5,000	"	97	" ....
L. V. RR. con. mtge. 6s reg	6,000	"	98½	" ....
H. and B. T. 1st Con. 7s. bonds	....	"	....	" ....
R. C. and I. Co. irregular mort. bonds, Brady Tract	....	"	..	" ....
Lehigh Nav. 6s. 1884	....	"	..	" ....
Reading RR. debenture bonds	1,000	"	82	" ....
" " G. M. 7s. Reg.	....	"	..	" ....
" " new convertible 7s	13,900	"	107¾	" ....
" " 7s, 93	5,000	"	108¾	" 109½
Reading C. and I. Co. debenture bonds.	5,000	"	82	" ....
Reading C. and I. Co. mort. bonds, Tamaqua Tract	....	"	..	" ....
Reading C. and I. Co. mort. bonds, St. Clair Tract	....	"	..	" ....
R. C. & I. Co, Wetherill tract	....	"	..	" ....
" " " " Locust Mountain Summit Improvement tract	....	"	..	" ....
R. C. & I. Co. Helfenstein tract	....	"	—	" ....
Lehigh Valley RR. 6s, reg.	1,000	"	104½	" ....
" " " 7s	5,000	"	109½	" ....
" " " con. mtge. 6s reg.	1,000	"	98¾	" 98½
Lehigh Coal & Nav. Co. 6s, gold loan.	17,500	"	101¼	" 101⅜
" " " " 6s, 1877.	....	"	..	" ....
" " " " RR. loan	3,600	"	102½	" 102¾
Schuylkill Nav. 6s, '95	3,000	"	81	" ....
" " 7 per cent. boat loan.	3,000	"	91	" ....
" " 6s, '72	....	"	..	" ....
" " 6 p.c. Impvt. loan	....	"	..	" ....
R. C. & I. Co., Gleutworth tract	....	"	..	" ....
Chesapeake & Delaware Canal, 6s	....	"	..	" ....
Susquehanna Canal, 6s	1,000	"	79⅜	" ....
Pennsylvania Canal, 6s	....	"	..	" ....
Shamokin Valley & Pottsville R.R., 7s.	....	"	..	" ....
Del. Div. Canal, 6s	....	"	..	" ....
Morris Canal, 1st mtge. 6s	....	"	..	" ....
Total Sales.	$82,000			

Gold and Silver Stocks.

SAN FRANCISCO, June 25, 1875.

The San Francisco Stock Market still continues to decline. The Consolidated Virginia Stock is quoted at $312 per share, a decline of $71 per share, as compared with our report of the 16th instant. Savage is $13 per share lower than last week, and the only exceptions to a general fall in the market are an advance of $8 per share in Eureka Consolidated, and one of $5 per share in Raymond and Ely.

Quotations June 24, 1875.

Gould & Curry	16	Overman	59
Savage	95	Raymond & Ely.	45
Chollar Potosi	72	Eureka C. V.	7
Ophir	45	Best & Belcher	44
Hale and Norcross	36	Kentuck	13
Crown Point	28	Meadow Valley	6
Yellow Jacket	74	Alpha	17
Eureka Consolidated	60	Sierra Nevada	12
Belcher	26	Union Consolidated	7
Imperial	7	Mexican	17
Consolidated Virginia	312	Caledonia	17
California	56	Silver Hill	—

Copper Stocks.

BOSTON, June 24, 1875

Copper stocks are quiet. Prices are firm, at a slight advance on quotations reported in our last.

We note recent sales of the National Mining Co. at $3¼ per share, and also of the Duncan Silver Mining Co. at 80c. per share.

Quotations are as follows:

Allouez	13	National	..
Calumet and Hecla Co.	154¾	Petherick	..
Copper Falls	8	Quincy	44
Central	31	Ridge	6
Franklin	12	Rockland	50c.

American Institute of Mining Engineers.

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Announcements to Members and Associates.

I. THE ENGINEERING AND MINING JOURNAL, containing the official reports of proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. Blank proposals for membership can be had on application to the Secretary.

IV. The second volume of Transactions has been mailed to all home members and associates not in arrears. Any member who failed to receive his copy will please notify the Secretary promptly. The Institute is not responsible for the loss of the volume in those cases where members have changed their residences and have omitted to inform the Secretary. Volumes I. and II. will be sent, post-paid, to non-members, at five dollars each.

THOMAS M. DROWN, Secretary, Lafayette College Easton, Pa.

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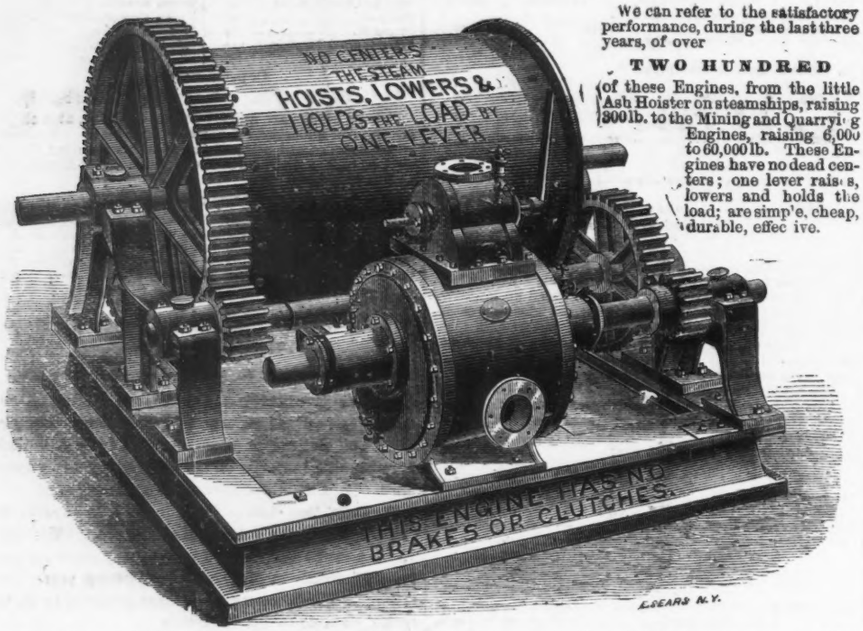

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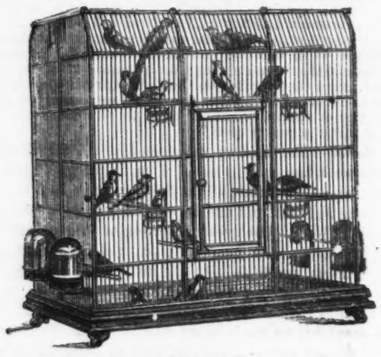

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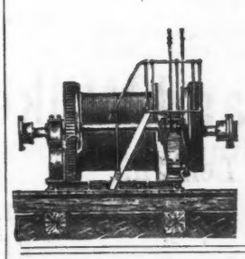

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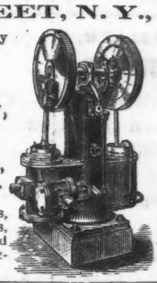

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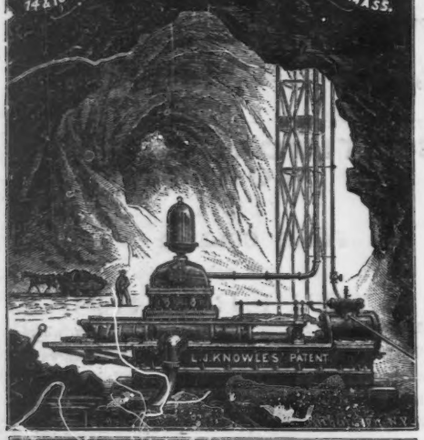

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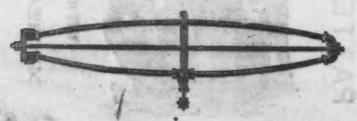

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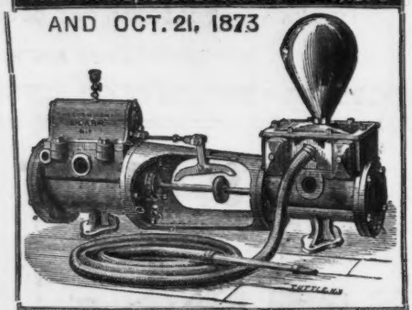

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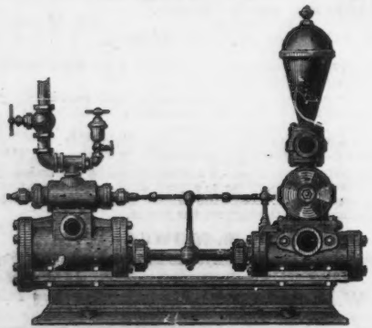

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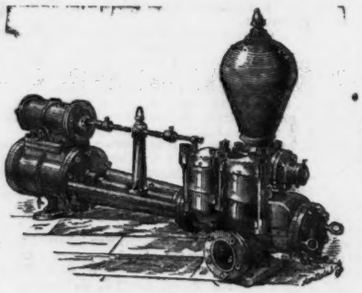

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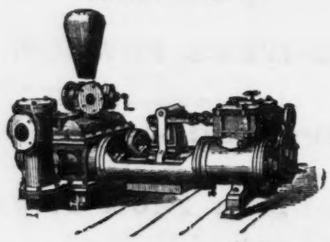

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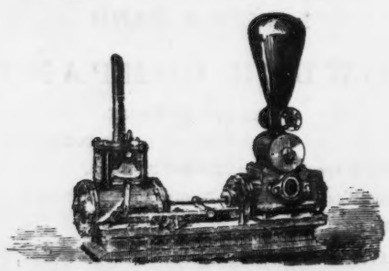

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